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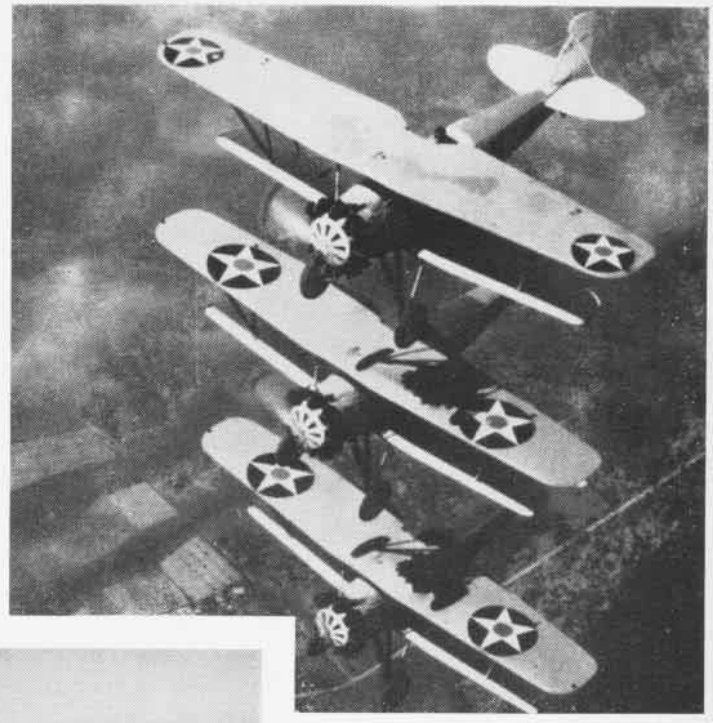
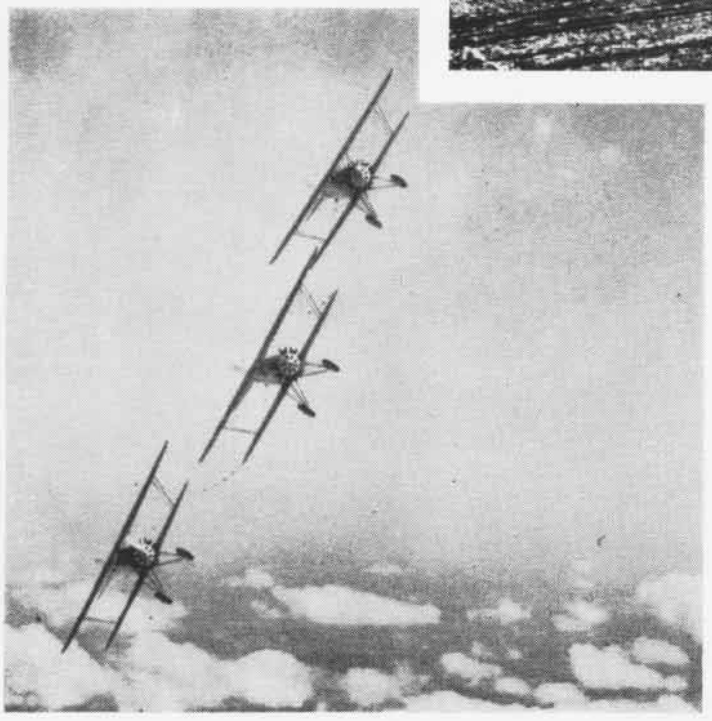
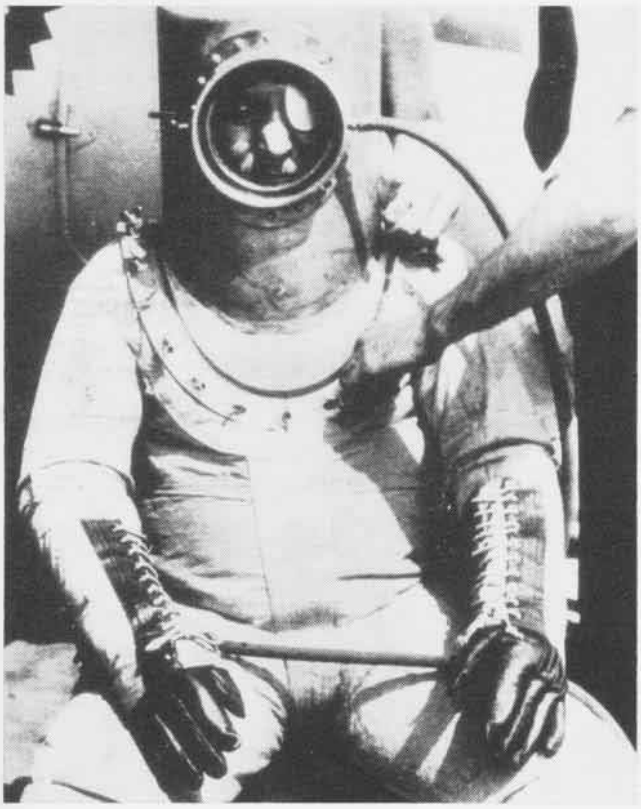
LOOPS AND LINE IN '29





Forerunners of today's Blue Angels, Naval Aviation's 'High Hats' thrilled the nation during the Roaring Twenties as they launched a legend for flight precision which still persists. At the 1929 Cleveland Air Races, awed fans watched the trio of Navy Boeing F2B's as they took off, looped, landed and taxied while tied together by short lengths of manila line. Cleveland team consisted of Lt. L. E. Gehres (RAdm. Ret.), Ltjg. F. N. Kivette (RAdm., ACNO) and Ltjg. F. O'Beirne (RAdm., ComCarDiv Three).



FIRST PRESSURE SUIT WAS DESIGNED TO PROTECT WILEY POST

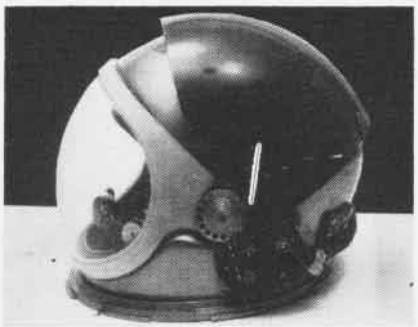
SAME GOODRICH DESIGNER WAS RESPONSIBLE FOR 1958 SUIT

FROM POST TO PRESENT

A CRITICAL moment in the first flight test of the Navy's Mark 3 lightweight, full pressure suit turned that event into a full scale emergency. An engine flame-out in the *Crusader* Lt. James D. LaHaye was flying 25 July 1957, caused instant loss of cabin pressurization at 52,000 feet.

At that point, the suit did exactly what it was designed to do: it began to inflate—and saved the pilot's life! Protected by the suit, Lt. LaHaye took his plane below 35,000 feet, obtained a re-light at 30,000 feet, returned to his base, NAS ATLANTIC CITY, and landed his aircraft safely.

There might have been another ending to this crisis but for the years of study and research that had preceded this flight, the primary purpose of which was to collect zoom-climb performance data. The secondary mission—evaluation of the pressure suit—had been unexpectedly grim, but it had fulfilled every wish for a "happy landing!"



HELMET MEETS ALTITUDE REQUIREMENTS

Flight suits and pressurization are not new requirements. What is new are the extraordinary measures that have to be taken if the pilot is to fly with safety at extremely high altitudes. If there is a loss of pressurization in the cabin, the pilot is instantly endangered unless he is wearing a suit that will give him safe passage through the rarefied atmosphere to a denser parachute and life-supporting altitude. Years of careful planning have gone into the design of such a suit since Wiley Post used his to protect him for high altitude flight. From Post's time to the present, great strides have been made in the design of high altitude pressure equipment.

HIGH ALTITUDE fashion designers have had their work cut out for them for a good many years. Wiley Post, famous aviator of a quarter of a century ago, required a pressure suit in 1934 when he attempted to break the altitude record set in 1933 by Lt. Renato Donati of Italy. The rubberized inflatable suit and early "space helmet" made by B. F. Goodrich were the results of the first genuine effort to build a full pressure suit. It made Post look like a knight in armor or a deep-sea diver, and it was so heavy he had to be hoisted into the plane.

Post claimed he went to about 49,000 feet. Faulty calibration of the barograph made it impossible for officials to substantiate his altitude, and he had not beaten the record by the time he was killed in a plane he was piloting for Will Rogers in August 1935.

The engineer and designer longest in the business of designing pressure suits is Mr. Russ Colley of the B. F. Goodrich Company. He designed the Wiley Post suit and also the Navy's Mark 3, the very latest in altitude garb. Another version of the Mark 3 is manufactured by the Arrowhead Products.

The problem of designing a suit which will give maximum safety to the pilot at altitude has never been simple. In dealing with it, there have emerged two schools of thought. One provides pressurization for the body by mechanically constricting the body surfaces, while the other inserts the body into an air-retaining suit.

The Navy's full pressure suit keeps the pressure on the body from dropping lower than it would be at 35,000 feet, and with the ventilation garment and insulated underwear as a part of the suit assembly, provides both cooling and protection against cold. The suit, worn in a pressurized cabin, is normally uninflated except for a one-fourth pound or less of ventilation air.

The Mark 3 pressure suit, which is 15 pounds lighter than the Mark 2, is, according to Mr. Lester M. Snider, the Bureau of Aeronautics supervisor of the pressure suit project, also "less expensive, less fatiguing to wear, more mobile, easier to maintain, and far easier to put on and take off than any others."

Take a look at what the well-dressed pilot headed for extremely high altitudes must don. If he is flying in cold weather or over water, he needs a union suit first. This underwear is made of waffle weave material designed to protect him against exposure.

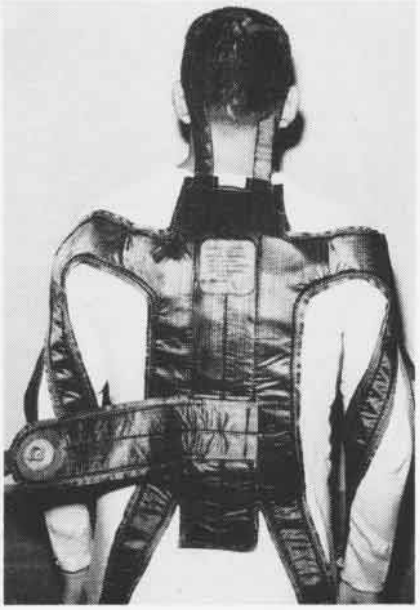
While this first garment is optional, the next is not. The *sine qua non* in apparel is the ventilation garment which distributes air to the body through ducts at wrists and ankles.

The anti-G garment is next. It is a conventionl Z-3 modified for use with the pressure suit. The outer garment is a sage green nylon and, in some cases, is aluminized.

The whole assembly consists of the suit, helmet, gloves and boots; the latter three are detachable. In addition to the suit, a control system consisting of emergency oxygen and a suit controller, is worn either in a back pan or seat pan configuration. A source of pressurized air and oxygen located in the airframe completes the pilot's equipment.

All services from plane to pilot can be quickly disconnected in an emergency which forces the pilot to eject. When this happens, the suit controller automatically gives the pilot the pressure and oxygen he needs.

VENTILATION GARMENT ADDS TO COMFORT



LIGHTWEIGHT MATERIALS MUST BE USED

CDR. FRANK AUSTIN WEARS MARK 3 SUIT

THE PART of the wardrobe that makes an onlooker think the pilot is ready for outer space is the helmet with its retractable visor. Once the visor is down, it is sealed by an inflatable pressure seal. The breathing regulator which is on the left side of the headpiece includes an on/off valve and a button which deflates the visor seal. On the right side of the headpiece is a knob which controls the tension of the internal straps and pads. A microphone and headphones are built into the headpiece, and the entire

helmet is carefully designed to provide maximum crash protection.

Two pounds lighter than that worn with the Mark 2 suit, the total weight of the new helmet is under five pounds. It has several advantages over the old helmet. Not only does it provide greater mobility and a better suspension system with conventional ear cushions, but no separate mask is needed. Mouth and nose areas are free.

The development of such a suit as the Mark 3 is no easy process. Save for the Wiley Post suit in 1934, there was practically nothing done in the pressure suit field until 1942 when the Navy and the Air Force started development of a suit. While the pilot could breathe in it, he could hardly move in it. The rigidity of his casing made him practically immobile.

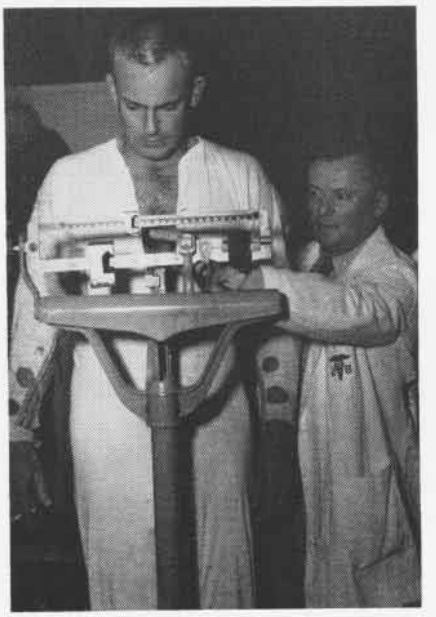
Throughout the years, the problem of protecting the pilot without freezing him into a fixed position continued to plague the experts. The first big step toward solving an advantageous physiological altitude while breathing 100% oxygen. If the interior pressure were lower, the pilot would have to have oxygen delivered under pressure, and breathing under pressure is far too fatiguing to be tolerated for any length of time.

But the problems still remaining were various and complex. Matters that plagued designers and cried for solution in the development of the full pressure suit could only be resolved by trial and testing. BuAer therefore contracted with the B. F. Goodrich Company for a series of suits.

STEP BY STEP, improvements were made: the retractable visor, oxygen defogging, lacings to expedite sizing of the suit to the individual, increased use of zippers, and detachable gloves. The headpiece was secured against rising under pressure, the suit was made water tight, and tests proved that nothing in the suit would conceivably injure

LTJG. VOHDEN ENTERS LOW PRESSURE CELL

HE IS SET FOR SIMULATED SPACE FLIGHT



AFTER 'FLIGHT' COMES PHYSICAL CHECK

it was taken in 1952 when the B. F. Goodrich Company devised airtight bearings and fluted joints to ease movement. Another improvement was the strengthening of the rubber material by vulcanization.

But the problem of immobility was not the only one. The other was the impracticality and potential danger of the pressurization system which had to be regulated manually. This was solved when the Firewell Company and the Air Crew Equipment Laboratory developed an automatic suit pressurization device, called the suit controller. Experiments were made with subjects at extreme altitudes in low pressure chambers. The degree of protection the suit gave against explosive decompression was assessed.

Today the pilot is maintained at an altitude of 35,000 feet in the pressure suit if an emergency involving loss of cabin pressurization occurs at any altitude above 35,000 feet. This altitude was chosen for two reasons: to keep mobility problems at a minimum and to keep the pilot at the pilot during ejection, parachute opening and landings.

But though the Goodrich series of suits increasingly fulfilled the goals of the designers, the suit was still heavy and bulky. BuAer set out to eliminate weight by using lighter materials and came up with the Mark 3 suit.

Only recently in special tests aboard USS *Forrestal*, seven flights were made with pilots wearing the Mark 3 suit. The four pilots—LCdr. F. H. Austin, Jr., MC, Maj. Roy C. Gray, USMC, LCdr. A. J. Nemoft and LCdr. Richard Jester, all from Naval Air Test Center, Patuxent River—were qualifying the F8U-1 *Crusader*. While this was their primary purpose, they seized the opportunity to use the suit for the first time in carrier operations. The pilots enjoyed the increased flexibility the new lightweight pressure suit provides.

Regarding the lightweight suit which saved his life, Lt. LaHaye reported its comfort in terms of the visibility and mobility it afforded in both the uninflated and inflated

conditions when his jet aircraft experienced its flameout.

At NAS ATLANTIC CITY, Lt. LaHaye donned the suit at 0915 except for helmet and gloves and did not man the plane until about 1155. While he waited to man the plane, the suit was occasionally ventilated with compressed air when LaHaye found it too warm; but since the temperature was about 78°, this was necessary for only about 10 minutes each hour.

"Once the aircraft was ready," Lt. LaHaye reports, "I went to the flight line and put on the torso harness, attached my backpack and climbed into the cockpit without assistance. After turning up the engine and making routine checks, I donned the helmet and gloves, taxied to the runway, and took off. On return after landing and removing the helmet and gloves I encountered some delays in returning to the ready room, including a hike of about 1/8 mile. Consequently, I did not get out of the suit until 1400. The vent garment was fairly well saturated with perspiration, but at no time did I feel that the suit was too much more uncomfortable than conventional flight gear in warm weather.

"In the uninflated condition, the visibility afforded by the suit was far better than I had anticipated. On a previous flight in a partial pressure suit, I was agreeably surprised at the good visibility it permits when uninflated. Since the backpack of the full pressure suit moves the pilot forward, I expected to have difficulty in seeing the switches on the after parts of the consoles. But I found that I could see and reach all necessary switches."

Prior to the flame-out, Lt. LaHaye tested the mobility and visibility permitted by the helmet. He found that by using simple techniques, he could see aft as far as the after edge of the canopy on both sides. His movement to the extreme left was slightly inhibited by the "D" ring of the parachute which rested on top of his left shoulder. He found too that the bulk of straps and other items at the shoulders had an adverse effect on mobility of the helmet because it restricted the movement of the neck ring. Then came the flame-out!

"When the suit inflated," he reported later, "it was something of a surprise because I did not expect the cabin pressure to be lost as soon as it was. The inflation of the suit was not an alarming experience, however, because the suit controller seemed to take over gradually as the cabin pressure decreased. The inflation of the suit caused a slight decrease in mobility. As near as I can estimate, it felt about the same as when the suit is pumped up to one pound on the ground. Control of the aircraft was not hampered by the suit and I was able to reach all necessary switches. I did not test the limits of my field of vision while in the inflated condition, but I felt it was completely adequate.

"Knowing that the suit was pressurized, I felt no urgency in getting down to lower altitudes for safety. Since I was distant from the ocean, I decided to use my altitude to give me additional range so as to be able to ditch the aircraft, if necessary, at sea rather than in an inhabited area. I set up a rate of descent which would give me maximum range, rather than one which would quickly get me down to altitudes where conventional high altitude equipment would be adequate.

"My over-all impression of this suit as compared with the partial pressure suit is that is has very little less mobility, visibility, and comfort in the uninflated condition. In the inflated condition, it is much more comfortable and affords much more mobility and visibility than an inflated partial pressure suit."

Since Lt. LaHaye's flight, there have been more than 180 sorties by pilots wearing the Mark 3 pressure suit. It is clear that pilots are going to be wearing the suit frequently. CNO has made it mandatory for pilots to wear a pressure suit if they are going to fly above 50,000 feet, for the very good reason that the pilot at that altitude cannot survive without that kind of pressurization. The F8U, F4D-1, and F11F can all go above 50,000 feet. (When LCdr. George C. Watkins set his record of 76,938 feet on April 18, he was wearing a Navy-modified partial pressure suit.)

DEVELOPMENT of equipment begins with a requirement set up by CNO. BUAER translates this requirement into a program and puts out requests for proposals to potential contractors in a variety of fields: suit manufacturers, shoe firms, harness suppliers, glove manufacturers, etc.

Projects are set up at ACEL PHILADELPHIA, AMAL JOHNSVILLE, NATC PATUXENT and various field activities to cover experimental and evaluation procedures. ACEL monitors contracts for the suits and equipment and conducts laboratory tests. Before flight tests take place, jump tests are made at the Naval Parachute Unit, El Centro, California, to make certain that the parachute harness

AUSTIN TESTS SUIT'S WATER INTEGRITY

RESCUE HELICOPTER COMES IN TO GET HIM

HE IS HAULED INTO THE COPTER SAFELY

and other survival equipment are in order. Thereafter the Aviation Medical Acceleration Laboratory, Johnsville, puts the equipment through acceleration tests in the centrifuge to prove that the G suit offers the protection it is supposed to give, and to prove that no problems are imposed by the equipment.

At that point come the flight tests. Pilots from VX-3 at NAS OCEANA, NATC PATUXENT RIVER, and VF-124 at NAS MOFFETT FIELD, participate in the tests.

AFTER ALL these tests are completed and the field reports are assessed, necessary changes are incorporated and the items are put into the supply system. Training aids, films, handbooks and instructions are prepared, and service schools are established to get the word to the Fleet.

"How I Flew on the Ground" or "My Day in a Pressure Chamber" are likely titles for the Navy pilots to use who are testing the pressure suits in low pressure chambers.

On April 14 at NAS NORTH ISLAND, Ltjg. William J. Pfister began an experiment in which he spent 16 hours encased in a Mark 3 suit and seated in a simulated cockpit in a high altitude (80,000 feet), low pressure chamber.

He was followed a week later by Ltjg. Arthur F. Vohden who continued the series of tests and pushed the endurance figure higher—to 24 hours at 80,000 feet. Vohden watched eight full length movies to break the monotony.

As parachute riggers and corpsmen stripped off the space suit, LCdr. Walter L. Goldenrath, Aviation physiologist in charge of the tests, began his post-flight checks. Pulse, heart, and respiratory reactions were taken and recorded. Vohden had lost five pounds; he weighed in at 186, out at 181.

The tests, Goldenrath pointed out, were conducted under the joint sponsorship of the BUMED and BUAER, to determine the physical and psychological stress put on a pilot under extreme conditions.

"At 80,000 feet," he said, "man's life expectancy out of a pressure suit is 12 to 15 seconds. His blood would reach the boiling point at 65,000 feet. We could have conducted the tests at 150,000 feet, but for safety, in the event of a forced 'descent,' we settled for 80,000 feet, which allowed us ample time to drop the chamber to a safe altitude. The pressure suit worn by Vohden was designed to operate in a complete vacuum."

During the experiment, Vohden carried out a series of exercises including head and arm movement and operation of flight controls simulating actual space flight conditions. Electro-cardiograph leads in the pressure suit supplied the doctors with essential heart rate and respiratory data.

On the east coast at NAS NORFOLK, LCdr. Jack Neiman, Jr., was "back to earth" May 11 after 44 hours in a huge steel and cement, low pressure station. He had been in the chamber at simulated altitudes of 80,000 to 110,000 feet under space conditions wearing the new Mark 3 suit.

LCdr. Neiman, Force Aviation Officer on the Staff of the Commander Cruiser Force, Atlantic Fleet, began his endurance run on May 9. Originally Neiman planned to spend about 30 hours in the chamber, but at that point he decided to stay longer. He volunteered for the test to make "his personal contribution to Naval Aviation."

The commander felt "fine, but tired and hungry" when he left the chamber. During the test "run up," Neiman

THE MARK 3 LIGHTWEIGHT PRESSURE SUIT HAS PROVED ITS WORTH

was able to take nourishment at various times. For this he was "brought down" in pressure to between 20,000 and 40,000 feet for brief periods and observed by attendants who remained outside the tank during the experiment.

Equipping a man for high altitude flight requires skilled assistance. At the Parachute Riggers school at NATTU LAKEHURST, part of the oxygen course deals with overhauling, maintaining and servicing pressure suits and all supporting equipment.

There are pilot indoctrination units at NAS NORTH ISLAND and NAS NORFOLK. The primary job of these supporting units is to fit and indoctrinate pilots in pressure suit equipment. Collaterally, the unit acts as liaison between BUAER and squadrons in the Fleet.

USS *Ranger* reports an installation of particular interest to pilots—a flight suit cooling system for all ready rooms on board ship. Often it may be necessary for pilots, fully dressed in pressurized-type flight suits, to spend considerable time in a ready room. When this happens, it is uncomfortable for the pilots who have had no means of cooling the flight gear. However, a *Ranger* pilot will now, upon entering a ready room, be able to connect his flight suit, by means of rubber tubing to a receptacle at his seat which circulates cool air through the suit.

The lightweight full pressure suit is still in the process of being modified. A variety of improved items are in prospect: a new entrance zipper, still better helmet tie-down, smoother disconnects, advanced helmet configuration, and continued work on oxygen regulation, ventilation and control systems.

The sky's no longer the limit. The Navy means to be ready with the right suit when man sets out for outer space.

GRAMPAW PETTIBONE

Falling Star

While cruising at 41,000 feet on his return from a cross-country jaunt the pilot of a TV-2 observed that visibility through the canopy was diminishing due to internal icing. Assuming that cabin pressurization was being lost, he commenced a descent which took him into a turbulent area.

The aircraft started to shudder. Finding it difficult to read the instruments, the pilot trained his flashlight on the horizon indicator which registered a 30-degree bank. He leveled the wings, hit more rough air, reduced power to idle, and extended the dive brakes.

The lights appeared to get dim and the pilot couldn't read the instruments. G forces increased to an estimated 3 to 4 G's and the pilot had a sensation of turning or spinning. He was thrown to the left side of the cockpit. He pushed the stick forward, to neutral, and then to the right with no apparent effect. Feeling that he was losing altitude rapidly and getting close to the ground, he decided to abandon his airplane. He hauled back on the stick in hopes of slowing the rate of descent and providing an opportunity to eject.

The recalcitrant jet continued to shudder and shake. He made three attempts before succeeding in reaching the canopy jettison handle. He then had similar difficulty raising the right arm rest of the ejection seat prior to squeezing the trigger and being blasted out into space.

He landed on a housetop and his parachute collapsed over the roof. The neighbors helped him down and he used their phone to call his base.

A reliable witness saw the aircraft come out of the overcast in a 45-degree dive. He estimated that the *Shooting Star* had fallen to *300 feet* before abruptly zooming back up.

The accident board determined that the only reason for the pilot's assumption of pressurization loss was canopy frosting and a lowering of cockpit temperature. Defrost switches were off and were *never turned on.* His extreme difficulty in seeing his instruments resulted from the combination of the acceleration forces encountered in turbulent air and the fact that *he had not adjusted the instrument light intensity* after he reached his cruising altitude.

Grampaw Pettibone Says:

Great Balls of Fire! It's just plain miraculous that this lad is still among the walking, talking group after this hairy hop. And I'm mad as a hornet that another jet bit the dust for no good reason. It was a mighty shoddy performance for a jet pilot with almost 500 hours in model. He musta been busy as a one-armed paperhanger when he tried shining a light on the panel to see which way was up. By the time he could attempt a recovery his jet job was descending at high speed in an unusual attitude.

This gent goofed off and caused himself a lot of trouble that he could have avoided by just being on the ball.

Dear Grampaw Pettibone:

Thought you might like to hear about an incident that recently had me a bit shook. I was in the bombing pattern with my FJ-4B and because my kneeboard strap gave me trouble and wouldn't stay fastened, I let it lay loose on my leg.

You guessed it. During my landing flare-out the stick froze and I couldn't get enough back stick to flare. My *Fury* touched down about three-point and I could get no aerodynamic braking. I first thought I had a control failure but on rollout I found the kneeboard wedged between stick and seat. My wheel brakes were good enough to allow me to get the airplane stopped on the runway but

rollout was increased due to lack of aerodynamic braking.

I had been forced to land on one of the shorter runways because the longest runway was fouled with an F3H that had used the arresting gear. If the runway had been wet I'd have barrelled right off the end and clobbered myself. I recommend that the kneeboard be stowed if the strap breaks.

Grampaw Pettibone Says:

Right as rain, bub! A place for everything and everything in its place. And that goes for stopping flying machines short of the rough terrain as well as making durned sure you have no UFO's (unstowed flying objects) aboard. They're booby traps!

Taxi-Turvy

Two helicopter pilots were practicing water landings on a scheduled training flight. After one pilot had made several landings, the other pilot took the controls and prepared to depart the lake for another approach. Due to the proximity of the shore and trees, the pilot turned the HTL-5 helicopter to the right about 90 degrees out of the wind. At an altitude of 2 to 3 feet and an airspeed of 3 to 5 knots, he began to air-taxi downwind in sideward flight in order to

gain sufficient space for takeoff.

While air-taxiing in the above condition, the pilot commenced a turn to the left. The forward edge of the starboard float struck the water and the HTL began an immediate rapid roll to the right which terminated with the helicopter inverted in the water. With minor difficulty and superficial abrasions the pilots evacuated the upended whirlybird.

Grampaw Pettibone Says:

It's purty obvious that the pilot erred in air-taxiing sideways at such a low altitude that he was left no margin of safety for controlling his machine or attempting recovery from settling, sudden gusts of wind, or loss of power. Appears as though these boys woulda been ahead of the game if they'd just busted out some oars and rowed away from the shore.

Too Many Cooks

After climbing to 5000 feet shortly after takeoff, the pilot of an F4D-1 *Skyray* noted that the fuel indicator registered only 1600 pounds and was dropping steadily, to his great dismay.

In the pilot's words, "I told the tower I had a critical fuel state, giving my position as 15 miles north, and said I was making a straight-in opposite my direction of takeoff. They cleared me and said the crash barrier would be rigged. The aircraft responded very well throughout the approach and I used speed brakes to slow down and dropped the gear at 250 knots. This procedure gave me about 130-140 over the fence and I touched down at 120 knots about 1000 feet down the runway. I shut down the engine, opened speed brakes, dropped the tail hook and began braking. The aircraft seemed to slow easily and I was able to stop about 50 feet short of the barrier on the 6000-foot runway with wheel assemblies intact."

Fuel flowing from the port main fuel cell, which had ruptured during takeoff, was ignited by the hot brake disks but the uninjured pilot jumped from the cockpit and the crash crew promptly brought the fire under control. Of the original 4000 pounds of fuel aboard at takeoff, an estimated 200 pounds remained at time of landing five minutes later.

Rupture of the fuel cell and associated structural damage to the *Skyray* resulted from excess pressure building up within the fuel cells, causing an expansion and stress of the tanks to a point beyond their stress limitations. The excess pressure was caused by blocking of the vent line by preservation tape. The tape had not been removed from the vertical fin fuel cell vent line during depreservation two days prior to the flight.

This was the last plane to be depreserved and it was subject to a rush job late in the day under poor lighting conditions in order that it could go on the steam cleaning rack which would not be available for use the next day. The job of stripping and removing tape from the aircraft became an all-hands affair, not one man's job.

The accident board attributed the accident to supervisory error since specific duties were not assigned to crews involved in removing tape from the aircraft and personnel error by maintenance men who did not comply with instructions to remove all tape.

Grampaw Pettibone Says:

This lad, a 450-hour man with 42 hours in model, had a mighty narrow squeak in getting back on the runway. But he made his decision and expertly carried it out. And that's a durned sight more than can be said for the maintenance people who almost stewed him in his own go-juice.

It all goes to show that too many cooks can cook up quite a mess. The maintenance gang should have made haste a little more slowly, including the inspector who checked the completed work without noting the tape.

MEMPHIS GETS NEW ROLE

BASIC TRAINING Group Seven, under Cdr. David R. Flynn, has begun intensified flight training at NAS MEMPHIS.

Students will have completed carrier qualifications and seven hours of instrument training in the Pensacola area before reporting to Memphis where they will get five weeks of navigational instrument flying in VA and VF aircraft.

Cdr. George E. Ford, training officer, is supervisor of the schooling at Memphis, which begins with a three-week, 40-hour ground training phase, including basic instrument procedures, local course rules and radio instrument navigation. As part of the ground school syllabus, each student will also complete 15 one-hour Link flights simulating the actual aerial hops to be flown later.

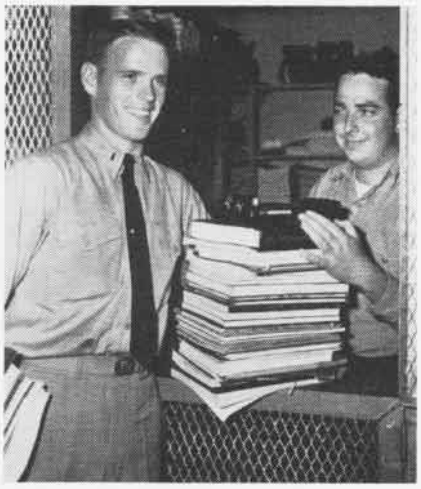
Following the ground phase, each student will get 28 hours of airborne instruction in the Lockheed T2V-1 *SeaStar* jet trainer and will use the procedures taught in ground school. All training flights will be made with an instructor. The jet indoctrination solo phase formerly given by ATU-205 at Memphis will no longer be taught.

Upon completion of the course, the student moves to the all-weather advanced instrument course formerly taught at Memphis by ATU-105 but which is now taught at Corpus Christi.

During the flight phase of the syllabus, the student will be introduced to the command and administrative relationships that exist in the fleet. The training group is organized along the lines of a carrier air group with the flight instructors working in four separate squadrons, each designated as a Basic Training Squadron. BTS-71 is under Lt. Peter A. Williams; BTS-72 under Maj. William L. Moore, BTS-73 under Maj. James H. White; and BTS-74 under Lt. Paul M. McGucken.

ATU-105 was disestablished in April and ATU-205 in May. Personnel formerly assigned to those units remained with the Advanced Activity until the end of May when they were transferred to the Basic Training Command.

During the change-over between the old ATU program and the new BTG-7 training schedule, maintenance personnel made maximum use of the Naval Air Mobile Training Detachment's T2V-1 trainers. Each maintenance division sent as many personnel as possible through the various phases of *SeaStar* training.



ENS. C. C. CROMER *(L), the first student to report, had just completed his carquals.*

Flight instructors had to learn the T2V-1 and qualify as a basic instruments instructor. They used a new training device, the 12BK18 cockpit procedure trainer, which allows the pilot to check out in actual T2V-1 cockpit emergency procedures while still on the ground.

Ground school instructors had to learn a new syllabus for the basic instruments course. All went through the two-week Basic Training Command instructor school at Pensacola.

When a student finishes the new course at Memphis, he moves to the all-weather advanced instrument course at Corpus Christi.

Cdr. Richard H. Bradley, Jr., and his assistant, Cdr. John E. Hunt, are in charge of the Group maintenance department. Cdr. George A. Buckowski is Group Schedules Officer and Cdr. Donald G. Kent is Administrative Officer of the training group.

Captain's Cup is Awarded

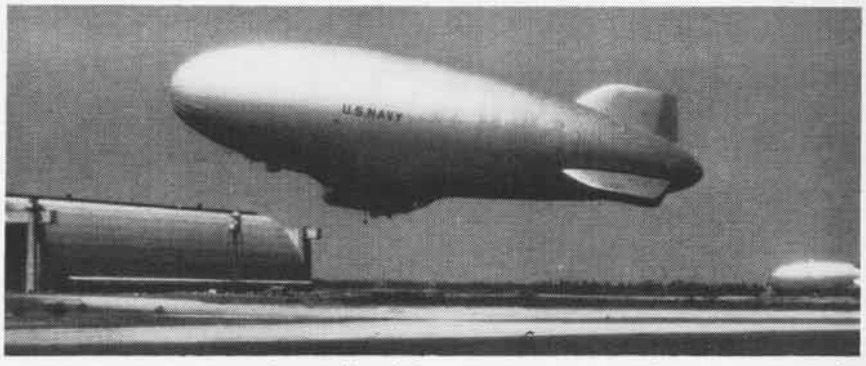
Greenwich Bay Spurs Performance

USS *Greenwich Bay* (AVP-41) has begun a practice of presenting the "Captain's Cup," a beautiful 30-inch trophy, to the ship's outstanding division each quarter.

Every aspect of military life, as well as individual professional ability, is considered in determining the most outstanding division. Factors resulting in the final score include monthly operational and administrative readiness inspections by the commanding officer, completeness and promptness of correspondence, effectiveness of training, participation in extra-curricular activities, athletics, ship's entertainment, military bearing and pride in the uniform.

Objective of the competition is to insure that each officer and man knows he is an important, integral man on his ship and in the Navy.

The *Greenwich Bay*, commanded by Capt. J. M. Wright, is one of a trio of small seaplane tenders whose primary mission is serving as flagship for the Commander, U. S. Naval Force, Middle East. During the remaining segment of each year she serves as an auxiliary seaplane tender under Commander Fleet Air Wing, Atlantic Fleet.



WASH-AND-FAST-DRY *materials are all in fashion. Dacron goes over big as it proves popular with lighter-than-air designers. Here a Navy airship using a dacron fiber envelope takes off from NAS Lakehurst, New Jersey. The ZS2G-1 is the newest type airship to use dacron envelope.*

F11F-1 TIGER SQUATS IN CLIMB ATTITUDE IN TEST TO VERIFY CENTER OF GRAVITY

GRUMMAN OPENS TEST LAB

A NEW FUEL systems test laboratory which will virtually eliminate a need for in-flight fuel systems testing and verification has been opened by Grumman Aircraft, according to a company announcement.

Leon A. Swirbul, Grumman president, said that the new center was "born of necessity, what with the fuel systems of modern aircraft having become increasingly complex."

Cost of expensive flight development test programs will be greatly reduced, while the reliability of the system in actual flight will be insured, he said.

Although a complete complement of testing equipment will not be in operation until this fall, the company has already made use of its new lab in its Calverton, Long Island, plant. The F11F-1 Tiger has been put through a complete series of weight and balance tests, with and without its fuel load.

Sections of Grumman's new jet-prop executive transport, the *Gulfstream*, have also been tested in the laboratory.

A full-scale program will begin in September, according to John Morley, head of lab operations. "We'll have all our equipment by then," he said, "and have already outlined a complete test program for our new observation airplane, the *Mohawk*."

Actual test programs will begin with the construction of a functionally duplicate mockup of the aircraft fuel system. When complete, the equipment will be mounted on a suitable steel framework which can be rotated through a range of angular travel corresponding to climb and dive attitudes of the airplane.

Once the mockup is fixed into a desired position, Morley said, high pressure fueling tests will be conducted to determine that safe levels of tank pressure are not exceeded and that automatic shut-off features are working properly.

A fuel flow bench, which is capable of testing fuel system components up to and including turbo-jet engine and afterburner fuel control units, will be supplied by the Navy, Morley said, and will serve as a major test unit at the facility.

As a safety feature, there will never be any combustion of fuel in the new lab. Engine usage of fuel will be simulated by pumping it out of the mockup, back into storage tanks. In addition, the lab includes a high-speed exhaust system for vapor removal and a conductive floor in test areas to minimize sparking.

Grumman is currently producing six types of Navy planes; the F11F-1 *Tiger*, the S2F *Tracker*, the TF-1 *Trader*, the WF-2 *Tracer*, the F9F-8T trainer, and the SA-16 *Albatross* amphibian airplane.

50 Instructors Honored

Flew from 500 to 2000 Safe Hours

Fifty flight instructors assigned to the Advanced Training Command Activity at NAS MEMPHIS have been recognized for their flight proficiency.

Lt Charlie N. James, Jr., headed the list by flying 2000 accident-free hours of instruction. Lt. John R. Schaub, Jr., Lt. Roger E. Sheets and Marine Capt. Howard S. McLellan earned 1500-hour certificates. The other instructors earned either 500 or 1000-hour certificates for continuous accident-free flight instruction of student Naval aviators.

In June the Naval Air Advanced Training Command Activity became Basic Training Group Seven, with Cdr. David R. Flynn named O in C.

ONE LARGE BLUE *pencil is turned over to VAdm. W. V. Davis, Jr. (right) by VAdm. J. S. Russell during recent ceremonies at Norfolk Headquarters. Along with the aiguillettes, the pencil is a symbol of the office of Deputy and Chief of Staff to CincLantFleet. Admiral Russell assumed duty of Vice Chief of Naval Operations, relieving Adm. H. D. Felt.*

GCA Unit is Ranked Fifth

Celebrates its 80,000th Approach

Chase Field Ground Controlled Approach Unit #19 celebrated its 80,000th radar-controlled landing to achieve fifth place throughout the Navy.

Lt. A. S. Friedman, flight instructor in ATU-203, and student pilot Robert C. Owen flew the radar approach in the F9F-8T *Cougar* jet. They were talked in by George R. Seegree, AC3, John F. Wendt, AC2, and John J. Rosas, RDC.

The mobile unit can be moved from one site to another to serve the runway in use. Furnished with every device found in a fully equipped tower, and control center, it can pinch-hit as such when it becomes necessary.

RIDDLE OF THE AIRSHIP L-8

THE AIRSHIP L-8 took off from Treasure Island, Calif., at 0600 August 16, 1942 on an antisubmarine patrol. At 1100 the same day it came to earth unmanned in the streets of Daly City. No trace of its pilots, Ltjg. Ernest D. Cody and Ens. Charles E. Adams, has been uncovered in the succeeding 16 years.

Few cases on record equal the mysterious disappearance of the pilots, but investigation of the flight revealed this chain of circumstances:

At 0750 Ltjg. Cody radioed the sighting of an oil slick just five miles east of the Farallon Islands and reported that he was about to investigate it. An attempt was made to contact the L-8 at 0805. When radio contact could not be established, two OS2U search planes were launched from Alameda to investigate.

The airplanes found a 500-foot ceiling over the area and decided to stay on top of the clouds.

Moffett Field received a telephone call from Fort Funston about 1045, reporting that an airship had landed there. The report said two men had gotten out of the airship and that it had taken off again.

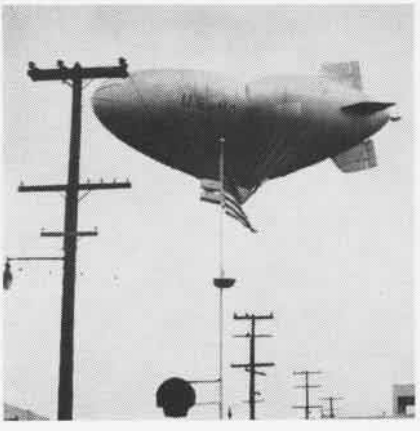
Half an hour later, word was received at Moffett that the L-8 had settled to earth at Daly City with no crewmen on board.

A salvage party from Moffett found the ship in fair condition. The envelope was deflated because the gas that had remained after the ship's free balloon flight had escaped when firemen slashed the envelope to see if anyone was inside.

The blimp's car (crew and equipment compartment) was in good condition, but the cabin door was open. One bomb was missing. The radio was operative, indicating that the cabin had possibly been unmanned as early as 0805 when Moffett tried to contact the airship. *Yet Fort Funston's report said two persons debarked from the blimp at 1045.*

The motors were stopped, although one throttle was open and the other half-open. Ignition switches were still turned on. The propellers were bent, but from all signs, had not been bent while rotating. Rubber life jackets were missing, but the life raft was in place. The classified document portfolio was in order, and there was evidence that the car had not been immersed in the sea.

PARTLY DEFLATED, L-8 COMES TO EARTH



There was no indication of fire. Plenty of fuel was aboard and the valves to the engines were open.

Concern for the safety of the crew mounted when it was learned that they had not landed at Fort Funston. The 1045 report had been in error. Investigators learned that what had actually happened about a mile from the fort was this: the airship drifted in from the Pacific and, descending slowly, struck the beach. Two bathers saw the ship coming down and attempted to seize the handling lines.

When the ship hit the earth, a bomb was knocked off, giving the craft enough static lift to send it on its way to Daly City, its next stop.

The bathers established the fact that when the L-8 drifted in from the sea there was nobody on board. The engines were stopped at that time and the gondola door was open.

Continuing the inquiry, investigators learned that when the airship investigated the oil slick, there was a Coast Guard boat, a Navy craft and several fishing boats in the immediate vicinity. Boat crewmen saw the airship come down low, drop two smoke flares, then fly off into the overcast.

There was no doubt in the minds of the boats' officers that the airship was under complete control at that time. One boat was so near the L-8 that it made every attempt to stand clear of the area because the skipper thought the airship was about to drop bombs.

At 1020 a Pan American Airways clipper sighted the airship. Ten minutes later, one of the *Kingfishers* sent out by Moffett Air Control saw the blimp break through the overcast at 2000 feet, then descend into it again. The L-8 was undoubtedly not under control when sighted by the Navy plane because the pressure height of the ship was 1000 feet.

There end the *known* facts of the crew's disappearance. Ltjg. Cody and Ens. Adams were declared missing August 16, 1942, and presumed dead as of August 17, 1943.

A great deal of conjecture has been voiced in the succeeding 16 years. It is evident that the officers disappeared between the time the airship was seen by the surface craft and the time it landed on the beach.

That an enemy submarine could have surfaced and surprised the crew while they were investigating the oil slick is most improbable because of the great amount of surface craft activity in the area. Such a surfacing would surely have been seen.

The submarine theory may be discounted still further because no enemy submarines were reported in the area and the classified folder was secure when the blimp landed.

The most logical theory is that the crew's disappearance was accidental and unintentional. Both knew that because of the prevailing winds they could free-balloon back to the mainland if trouble was encountered. Had they experienced difficulty with the airship, it is inconceivable that they would abandon it immediately, especially without radioing their intention to do so. Further, no evidence of trouble, except the dead motors, was found when the ship was salvaged.

CAR WITH BOMB ATTACHED IS UNDAMAGED

The usual explanation is that at some time during the flight one of the officers might have leaned out of the car, lost his balance, and fallen part way out. The other then rushed to his aid and during the struggle to get back into the car, both fell from the ship. The open door is regarded as fairly good proof that they left the ship by means of it.

The position of the throttles does not tend to verify this theory, for the pilot would certainly not leave one engine full on and the other halfway so when he went back to pull his companion into the ship.

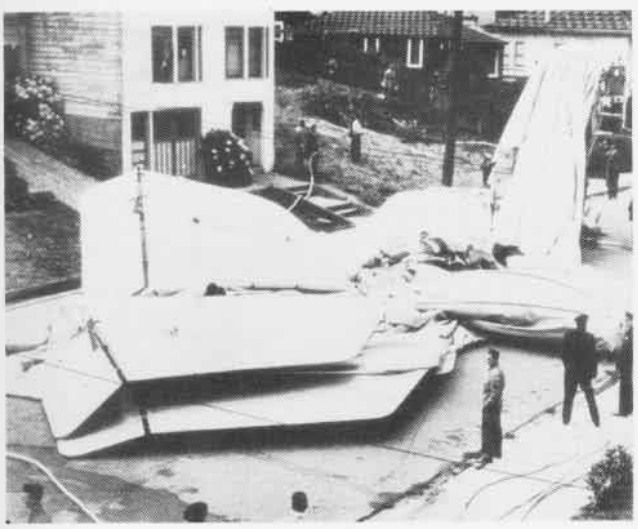
However, the throttle positions might be justified if the motors were dead. That condition would also justify the theory of why one of the pilots climbed out onto the outrigger. It is also possible that the motors had been idling and had simply choked out; that the throttle positions could have been caused by the Daly City firemen climbing over the L-8 when it landed.

But one theory not answered in the investigation report is this: With good evidence that both pilots were wearing life jackets, and with the sea heavily patrolled by surface craft, why were their bodies never found? If they were picked up, who did it?

The L-8 was salvaged and returned to service. Before the phantom flight, the airship had been piloted by Ltjg. Cody to a rendezvous with the carrier *Hornet* as that ship steamed from the West Coast to conduct the Doolittle Raid on Tokyo. The L-8 dropped 300 pounds of navigator domes to the *Hornet* at sea.

After its crack-up in August, the L-8 saw a great deal of service in covering amphibious landings at Camp Pendleton, Calif., then it was returned to Moffett and placed into service as one of the training ships for a new lighter-than-aircraft training program.

ENVELOPE LIES COLLAPSED AFTER BEING RUPTURED BY FIREMEN



WITNESSES TO PHANTOM LANDING SPECULATE ON PILOTS' FATE

AEW GUARDS THE PACIFIC

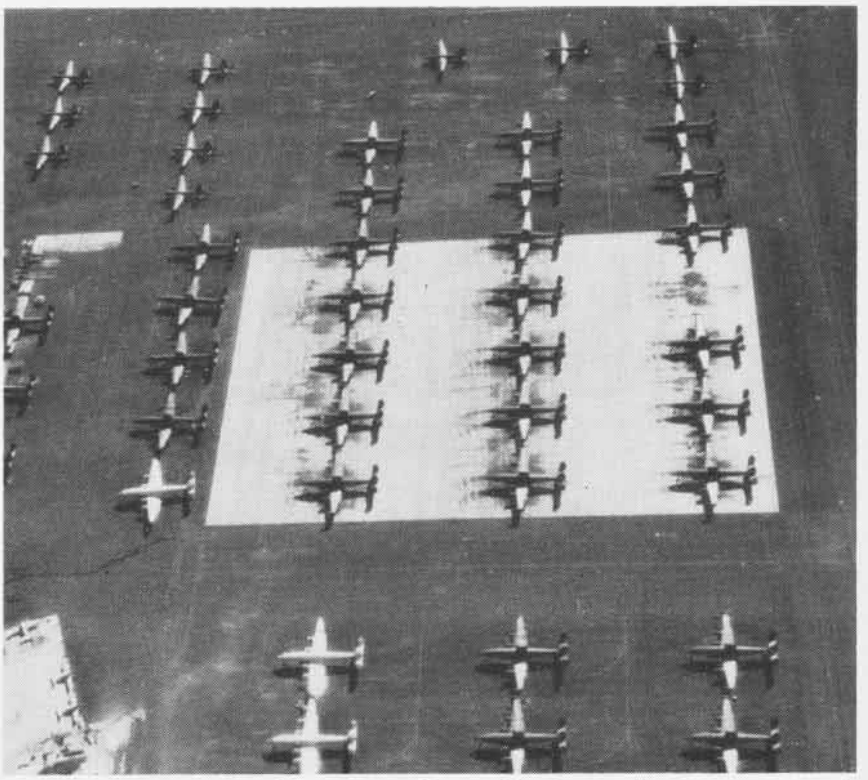
BARRIER PACIFIC became fully operational last month, stretching the nation's airborne early warning net from the middle Atlantic, across North America to Midway Island, 1500 miles from Alaska in the Pacific.

The new Pacific arm of the warning line is expected to shut the door effectively on any possible sneak attack that depends on the fog which blanks the area between Midway and Alaska so thoroughly most of the year.

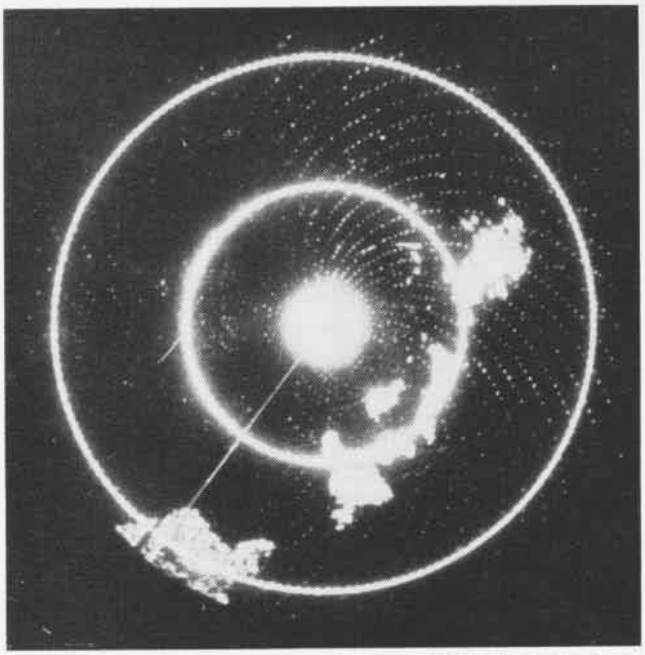
Barrier Pacific has been more than two years a-building. Capt. Edward C. Renfro arrived in Hawaii in January 1956 to establish AEW Wing Pacific. He was to get a wing of radar-equipped *Super Constellations* and the necessary radar picket ships later, but he had only a plan in the very beginning.

Delivery of the picket planes was authorized, ships were pulled from mothballs, and construction necessary to expand base facilities was begun. Crewmen who would man the planes and ships began to arrive with their dependents and final plans were made to get the job underway.

RAdm. Benjamin E. Moore, Commander Barrier Pacific, now heads an



HOME BASE *for the radar-packed Super Constellations of Airborne Early Warning Wing Pacific is NAS Barber's Point, Oahu, where squadrons draw aircraft for deployment on the barrier.*



HAWAIIAN ISLANDS, *as seen by radar from 10,000 feet altitude by Super Connie crew returning from 16-hour patrol over the Pacific.*

organization of aircraft, ships and equipment valued at millions of dollars.

Barrier Pacific began, on schedule, a 24-hour-a-day watch, seven days a week in July. An unidentified ship or aircraft moving across the 1500-mile expanse now causes scopes to light and warnings to sound instantly.

To get the most airborne protection for the least money, planners studied the operating and maintenance procedures followed by commercial airlines which use Lockheed *Super Constellations*. They adopted those procedures which would increase aircraft availability while reducing expense and maintenance time.

The major step taken in this direction was establishment of progressive maintenance procedures for the big planes, *in the area of operations*, rather than send them back to the States for lengthy overhaul. Lockheed Aircraft Service facilities at Honolulu International Airport provide maintenance service under Navy contract.

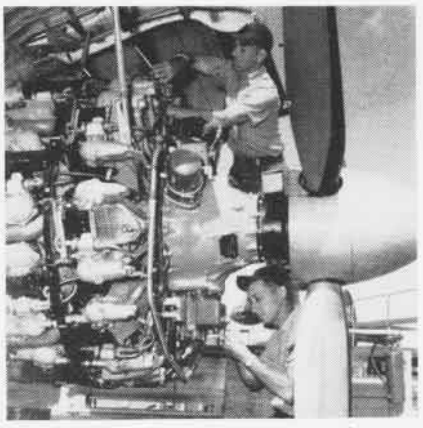
FINAL PREPARATIONS *for takeoff are made by a Connie crew which flies barrier patrol.*

ALL FLIGHT STATIONS *are manned and crew is alert to detect unidentified ships or planes.*

RADIO OPERATING *positions are manned to receive and relay "bogie" reports from planes.*

MAIN RADIO *receivers at headquarters are kept perfectly tuned to handle incoming reports.*

ELECTRICAL EQUIPMENT *is tested in flight by D. W. Strouble, AE2, during a barrier patrol.*



EXPERIENCED MECHANICS *like J. Gayda, AD1, and W. J. Young, AD3, keep Connies flying.*

Skyray Punch Increased

Device Registers Hits by Rockets

Adoption of two accessories have given F4D *Skyray* jets of Marine All-Weather Fighter Squadron 114 an increased capability. The new equipment consists of a rocket pod containing seven 2.75 "Mighty Mouse" rockets, and a firing error indicator, which is used to photograph hits made on targets by the rockets.

The new rocket pods are carried on external racks located on the underside of the F4D's wings and are fired by the pilot. The method is accurate, even when the pilot is engaging in high speed target work. The "kill" probability of the squadron is thereby greatly increased.

The firing error indicator has undergone evaluation by Westinghouse Electric Company at NAS PATUXENT RIVER and is currently being installed in VMF(AW)-114 squadron aircraft.

The system uses an exterior camera pod which has a 16-mm camera with a telephoto lens. The camera is specially wired in the squadron electric shop to operate automatically when the external rocket package is fired by radar.

FIRING ERROR INDICATOR IS ATTACHED

F8U-1's Pass Sniff Test

Device Locates Fuel Tank Leaks

Chance Vought is using a "sniffer" which "lets out a wail like a stepped-on tomcat" if it detects a pungent odor while checking leaks in the integral wing fuel tanks of *Crusaders*.

The operation is part of a pre-flight "torture test" given the center section of the fighters' wings to spot possible discrepancies or leaks in the wing, a self-contained fuel cell.

After it is assembled, the wing is secured in a deflection fixture, a structural device which permits one end of the wing to be anchored fast while the rest of the wing is physically twisted and bent to simulate the stresses that can be expected in flight.

Compressed air with trichlorethylene fumes is pumped into the tank and a thorough check of joints and seams is made with the smell-sensitive sniffer. A noise registers if the device detects any escaping fumes.

After a leak is sealed, twin hydraulic pistons attached to each end of the wing bend it upward with 48,000 pounds of pressure for structural tests. Six-inch cylinders move the wing tip upward four inches and cycle it five times. The control unit synchronizes the movement so that equal pressure is applied on both cylinders for test. Bending the wing upward four inches subjects the structure to forces similar to those met when the *Crusader* makes a pull-out from a dive at high speed.

CAPT. H. K. LAING, *CO of NS Sangley Point, presents Paul G. Loefke, ADC, with a letter of commendation for his work with Boy Scouts. Since May 1956, Loefke has devoted much off-duty time to youth activities.*

Revised Manual Ready

BuPers Issues Retirement Booklet

Your New Career, a booklet on the main problems of retirement and their solution, has been issued in revised form by the Personnel Analysis Division, Bureau of Naval Personnel.

The booklet (NAVPERS 15895-A) gives a general analysis of the situation and takes up various aspects of retirement under the headings of health and aging, finances, activities, job procurement. A bibliography is included.

Another Moffett Record

100,000 GCA Landings are Logged

Moffett Field claims that it is the first All Weather Master Navy jet base to complete 100,000 Ground Controlled Approach landings.

Capt. Arthur S. Hill, Commanding Officer, flew the record-smashing radar run in a Beechcraft, directed by R. E. Davidson, chief controller.

Commissioned in 1947, Moffett's GCA unit directs an average of 50 approaches each day or 1000 each month. Many types of planes, ranging from supersonic jets to *Super Constellation* transports and USAF B-36's, use the Moffett facility.

The GCA unit was incorporated into Moffett's advanced Radar Air Traffic Control Center, jointly operated by the station and CAA. Moffett's RATCC unit, linked with other CAA and military facilities in the San Francisco Bay area, provide a radar net coverage of 150 miles.

Not only does the new RATCC setup provide a greater margin of safety, but it also increases the amount of air traffic which can be controlled.

CAPT. HILL (R), DAVIDSON HOLD RECORD

Admiral Flies USAF Jet

Exceeds Speed of Sound in Ride

A Navy admiral and a Marine major flew an Air Force jet faster than sound over San Diego.

VAdm. Ralph S. Clarke, Commander Carrier Division Five, took the controls of a TF-102A jet trainer for a few minutes of supersonic flight.

The two-seat Convair jet was piloted by Maj. Joe Lafayette, an exchange pilot serving with the Air Force 327th Fighter Interceptor Squadron at George AFB, Victorville, Calif.

Maj. Lafayette took the delta-wing jet off from NAS NORTH ISLAND and landed it there, but turned the controls over to the admiral during the 40 minute flight at 40,000 ft.

Adm. Clarke liked the F-102's versatility. It was the first of the AF "century series" he had flown.

THEY STUDY CONNIE'S CAPERS

THE AIRBORNE Early Warning Training Unit Atlantic, based at NAS PATUXENT RIVER, has become since its commissioning February 15th, an important unit in the ComBarLant organization.

The unit continues most of the same functions it had under its previous title "AEWWingLant Training Unit," and it has been given added responsibility for training, on a space available basis, personnel from other organizations with an AEW function.

Commanding Officer of the unit is Cdr. George Flanagan. Staffed by eight officers and 45 men who are supplemented by instructors from AEWWingLant Squadrons, the unit is equipped to teach virtually all WV flight operations.

Familiarization courses are conducted for pilots, flight engineers, navigators, CIC crewmen, radar technicians, radiomen, flight electricians and most maintenance personnel. Duration of the courses varies from two days of ground school in the pilots' refresher course to 19 weeks for the flight engineers' course.

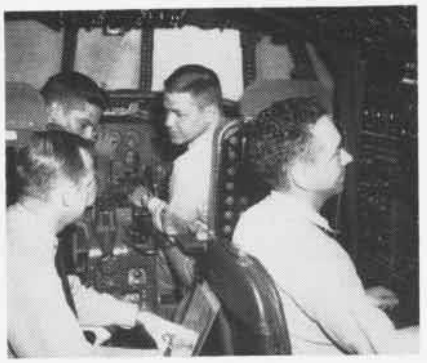
Training for entire CIC crews can be accomplished in trailerized CIC trainers. The trainers are built in two units; one duplicates the CIC compartment of a WV plane and the other, a problem control unit, has facilities for simulating any number of moving aircraft targets, ships, sea return, wind, and the plane's own track and ground speed.

Personnel in this unit act as communicators on the picket ships and shore stations in addition to setting up problems and evaluating the students' work.

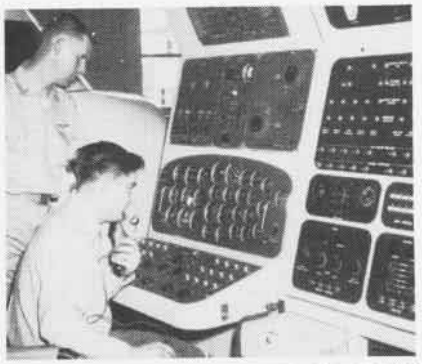
Tape recordings of interphone and radio transmissions are made during training and are played back so air controllers may assess their own mistakes in radiotelephone procedure.

Such training results in large savings because practice bogeys can be simulated by simply turning a knob instead of actually launching practice raids and bogeys.

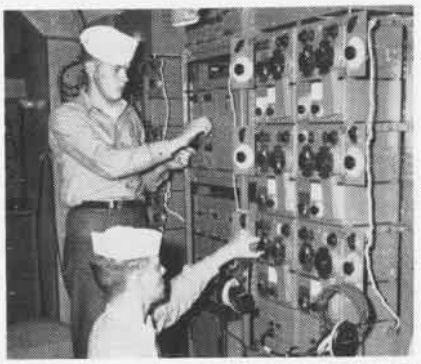
Comparable savings are made in flight crew training through the use of the "procedures trainer," an instrument trainer, and the WV-2 simulator.



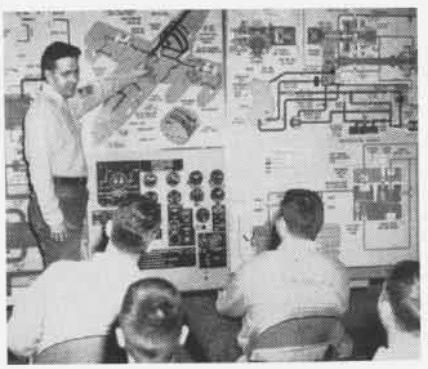
STUDENT PILOT 'FLIES' WV-2 IN TRAILER



'CONTROL TOWER' IS MANNED FOR FLIGHT



TARGET'S BEHAVIOR IS FED INTO PANEL



TRAINING PANEL DEPICTS COMPLICATED WV

The procedures trainer is a mock-up of a WV-2 flight station with a limited number of operating instruments and controls for the pilot and engineer.

The instrument trainer, or 2F25, is used for teaching instrument flight procedures to pilots. The WV-2 flight simulator is a high fidelity trainer used for pilot and flight engineer training. It combines the features of the procedure and instrument trainers and adds the feel of the controls, engine noise and flight characteristics of the WV-2 aircraft.

Virtually any mechanical emergency that can possibly arise in the WV-2 can be simulated by the flip of a switch on the trainer trouble panel. More emergencies are simulated in the trainer in one training period than an entire squadron encounters during weeks of normal flight operations.

Emergencies which would be dangerous to simulate in the air are set up in the trainer to teach procedures and test flight crew reactions. Student pilots and flight engineers receive training simultaneously.

The syllabuses for the pilots and flight engineers are closely coordinated, and the three-hour periods in the simulator are the most action-packed the students will ever spend in a *Connie*.

Flight engineer students receive an average of 13 training periods in the simulator while prospective plane commanders receive ten, and first and second pilots, five.

Code, typing, and circuit procedures are taught at AEWTU's Radio School. Graduates of the two-month course average 15 words per minute code speed. WV-2 systems courses for AT's, AD's, AM's and AE's are held periodically. Instructors for these maintenance courses come from the training unit and from AEW squadrons. Some courses are taught by civilian instructors from Fleet Aviation Electronics Service Unit, Washington, or by representatives of the companies supplying units in the WV-2 radar system.

Most of the maintenance training courses last three weeks or less, but they serve to indoctrinate maintenance men faster than the men would be qualified through on-the-job training.

PROBING THE

WIND EXPLORATION ALOFT ADDS POWER OF THE JET STREAM TO JET AIRCRAFT

MILES ABOVE the earth, great currents of air move at tremendous speeds. This is no new phenomenon, although it is only within recent years that its existence has been recognized.

The jet stream (though it turned out to be plural) first manifested itself in World War II when pilots, heading for the bombing of Japan, found themselves all but stopped by a tremendous wind blowing east. Sometimes they were blown off course. At first, it was thought that the pilot had run into some local gusts, but as pilot after pilot reported the same experience, the matter was investigated and the existence of a great jet of wind became generally known.

The discovery of the jet stream, which offers such fascinating possibilities by adding push to jet power, waited upon the development of tools to probe the upper skies. First investigations were conducted by releasing various types and sizes of balloons and balloon-borne instruments from the ground. Even now, balloons provide the day-by-day, far-flung coverage of what goes on in the stratosphere. At MCAF IWAKUNI, Japan, Navy meteorologists established in June 1957 a station for launching great plastic balloons that float at 30,000 feet as they follow the jet stream across the Pacific. They carry weather instrumentation only and telemeter to surface points upper atmosphere data (NANEWS, June 1957).

Investigating this phenomenon miles above the earth is as exciting a project in meteorology as it is significant. As more and more is known about the properties of this big wind in the upper skyways, the greater is the possibility that they can be utilized more widely for high-altitude flight.

The U. S. Navy has pioneered in jet stream research since 1946, when a Navy-sponsored project at the University of Chicago began the first intensive study of this meteorological phenomenon. The Navy's operational program has been underway since 1950, and is part of a broad upper-air research program conducted under the leadership of LCdr. J. W. Hinkelman, Jr., a Navy Pilot and Aerologist, at the Navy Weather Research Facility, Norfolk, Virginia.

Among many other important discoveries, this research has shown that it is misleading to speak glibly of the jet stream, for it isn't always one fast moving current of air. It may be several currents, and it may or may not be continuous around the hemisphere.

In cross section, jet streams may extend up to three miles vertically and several hundred miles horizontally. Their course is usually found between five and eight miles above sea level. Jet streams are characterized by a great inconstancy, showing wide variations in wind speeds and substantial deviations in course. Wind speeds have been measured as high as 265 knots, but the usual velocity ranges from 100 to 200 knots. The speed of the wind may be in the low jet range and then, within a few miles, suddenly increase. Scientists for convenience refer to three types of jet stream: Arctic Jet, The Jet and Subtropical Jet. These terms indicate their general geographic location: higher than 50° latitude, between 30° and 50° latitude and below 25 degrees.

It is this variation in velocity and location that makes the problem of utilizing the power of the jet stream complex. Were it a fixed current traveling at fairly constant speeds, it would be a simple matter for long-range aircraft to take advantage of its power. Of the jet stream, Cdr. W. J. Hitsch, a Navy aerologist has written: "Instead of roaring on a straight horizontal course completely around the hemisphere, the jet stream meanders vertically over several thousand feet of altitude, as well as in a north-south direction."

Hooking a ride on the jet stream paid off in 1951 when Capt. Charles F. Blair of Pan-American World Airways made a record flight in a single-engine *Mustang* from New York to London in seven hours 48 minutes. Although Capt. Blair was in the jet stream only part of the way, it was long enough to be a real factor. He had enough fuel when he arrived in London to have made it possible for him to fly on to Moscow and return to Berlin.

The jet stream is naturally a very important source of additional speed for propeller aircraft, but is of even greater importance to jet aircraft which go to levels at which maximum winds are most likely to be prevalent.

Jet Stream power also proved a factor in a record-breaking flight in the spring of 1957. An A3D-1, assigned to the Navy Weather Research Facility, was to be fitted out with special instruments for its use in probing the jet

stream. But there were delays in delivery of special instruments, so in the meantime the *Skywarrior* was used to test operational jet stream and high level wind forecasting and navigation techniques. As a direct result, on 21 March, two transcontinental speed records were broken when the A3D-1 completed a round trip Los Angeles-New York flight in a total elapsed time of nine hours, 35 minutes, 48 seconds. Cdr. Dale W. Cox of Service Test at Patuxent piloted the plane, and LCdr. Hinkelman made the jet stream forecasts.

What does the stream do to a jet aircraft?

The presence of head or tail winds has a considerable and obvious connection with the effective range of aircraft. Less obvious is the combined effect of the two winds, each operating for part of the time, as for example, on a jet plane flying a nonstop track from carrier to target with the wind, and back—against the wind. When these favorable or unfavorable winds may add to or subtract hundreds of miles per hour from the ground speed of the plane, this effect is worth understanding.

Let us cite a few examples. Suppose the distance between carrier and target is 600 miles, and the jet plane has an airspeed of 600 miles per hour. Under no-wind conditions, the round trip flight would take two hours (1,200 miles at 600 miles per hour). Now let us assume that a 200 mile-per-hour jet stream wind blows along the direct course from the carrier to the target. On the trip out, the plane makes good a ground speed of 800 miles per hour and takes 45 minutes for the trip. The return is made at 400 miles per hour in one and a half hours. Total time of flight is then two hours and 15 minutes. The jet stream adds 15 minutes to the flight time or takes away approximately 75 miles from the effective range of the airplane on this flight.

NOW CONSIDER a situation in which the plane uses the favorable wind on the outbound flight which then lasts 45 minutes, but ducks away from the jet stream on return flight. The jet stream is reasonably narrow, and the pilot can select another altitude for his flight home. At the new altitude he may encounter a 50-mile-per-hour headwind. His return trip takes one hour and approximately six minutes, and total time for the round trip is one hour 51 minutes. The saving is 24 minutes or 120 miles in range over the effective range had he not changed altitudes.

The jet stream reaches its greatest intensity during the winter months and is intimately connected with weather patterns of the lower troposphere. Cyclonic storm activity and precipitation tend to be concentrated along the axis of the jet. Areas of maximum wind velocity along the direction of wind flow, as well as across it, exist within the jet-stream and cyclones deepen and intensify when located favorably with respect to the jet maxima.

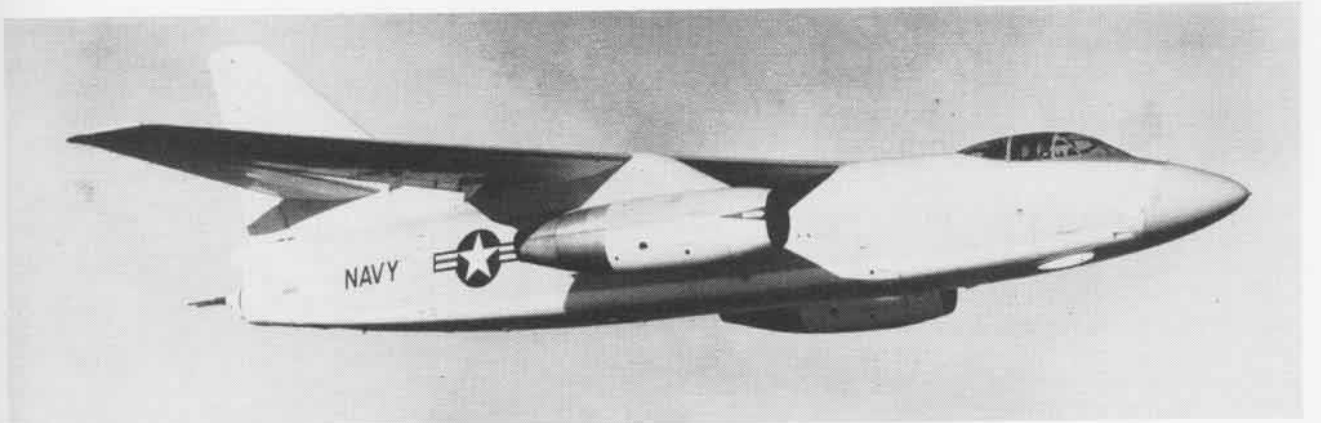
There looms also the relation of the jet stream to the operation of guided missiles. The question of turbulence is primary in this field, since many guidance systems are based on the concept of the missile as a stable platform. While guidance systems which are completely independent of existing atmospheric conditions can be built, their complexity raises the price of missile utilization to such magnitudes that large-scale use might prove prohibitive.

Where guided-missile operation depends upon transfer of control from one director to another, the jet stream may influence the missile to the extent that rendezvous with the second director would not be achieved.

But what about turbulence? Any study of the profile of the jet stream viewed vertically or horizontally reveals radical variations of the wind speeds. These variations produce acute shears and result in turbulence. No one knows the exact distribution of turbulence associated with the jet stream. But it can be great enough to structurally endanger jet aircraft and disrupt operational missions.

The Navy Weather Research Facility is staffed by recognized scientists and qualified naval officers who have the task of whipping basic and empirical meteorological knowledge into a shape immediately applicable to naval operations. In addition to the information obtained from balloon-borne instruments, special studies of the jet stream must also be made if the phenomenon is to be understood. In order to increase knowledge of the details of the jet stream, specially instrumented jet aircraft flights are being made to determine wind vectors at frequent intervals, measure temperature, temperature gradient and humidity accurately, and to locate clear-air turbulence in relation to other parameters.

On December 30, 1952, two Navy pilots climbed into their specially instrumented F3D *Skyknight* jet aircraft at Patuxent River, Md., and soared



A3D SKYWARRIOR IS PRESENT JET PROBING AIRCRAFT, SUCCESSOR TO THE F3D SKYNIGHT THAT MADE PROBES IN 1952-54

skyward to obtain the first detailed information on the jet stream. The flights were not initiated until mid-winter because that is the most favorable time for investigation. In place of guns, bomb racks, etc., special instruments had been installed. Accurate temperatures are obtained by a vortex thermometer, which gives accurate temperature readings at tremendous speeds reached by the jet aircraft. In all, 67 flights were made during the winters of 1952-53 and 1953-54. Collected data were processed and evaluated in a program established by the Research Facility and the University of Chicago.

The development of Doppler radar navigation systems promises to provide extremely accurate navigational data which would permit precise wind determinations. Accordingly, BuAer and Navy Weather Research Facility began plans in 1956 for a new program of research flights based on the Doppler system. An A3D-1 aircraft, the same aircraft which set the cross country record later in 1957, was assigned in October 1956 for use of the Research Facility. The meteorological instrumentation system in the aircraft included: a Ryan AN/APN-67 Doppler-Radar automatic navigator for determining position and measuring winds, a modified velocity-gust-height turbulence recorder provided by NACA, a precision air speed indicator panel, and an AMQ-8 aerograph equipped to record temperature, humidity, pressure, and time.

The Ryan automatic navigator and the aerograph were the first of their type to be installed in an operational Naval jet aircraft. The aerograph included an automatic, carbon-type humidity measuring device. This successfully recorded moisture at high altitudes and low temperatures.

Probe flights began on 20 December 1957, and by 15 April 1958, a total of 17 successful flights had been completed, most of which were flown by Service Test pilots from Patuxent over the Eastern United States. One cross-country trip from Patuxent to Los Angeles was made, in which jet-stream observations were obtained on both the outgoing and return flights, as well as from two local flights on the West Coast. This flight program will be continued during the 1958-59 winter season, according to the present plan.

Each day the upper air weather charts at Navy Weather Research Facility are carefully scrutinized to determine the possibility of a probing flight "tomorrow." From several preplanned flight patterns, the NWRF forecaster chooses the one which will provide the most useful meteorological data under the prevailing synoptic situation, taking into account such factors as intensity, altitude, and location of jet stream, airways-control problems, etc. The flight plan is then relayed by telephone to the NATC pilot, along with a briefing on wind and weather along the route.

THE SEVERAL flight patterns are designed to obtain a detailed picture of the structure of the jet stream under a variety of conditions. Each pattern generally includes several legs of 300 or 400 nautical miles each, at varying altitudes. The simplest pattern consists of four consecutive traverses on reciprocal headings across the jet stream axis, with 2000-foot altitude separating each traverse. Similar patterns parallel to the jet axis, as well as zig-zag or saw-tooth traverses at angles to the jet axis, and criss-cross penetrations, are sometimes followed.

Observations are taken automatically throughout the flight and are permanently recorded on microfilm by the photo-recorder which photographs the instrument panel at 15 second intervals. Each 15 second observation includes the following data: time, position (latitude and longitude), drift, angle, ground speed, ground track, heading, true air speed, pressure altitude, pressure, vortex temperature, humidity scale units and vertical accelerations. In addition, any visually observed phenomena (clouds, contrails, turbulence) are entered in the log.

Upon completion of each flight, the photo-recorder microfilm, aerograph record, and the meteorological observation notes are forwarded to NWRF for tabulation. The turbulence recordings are evaluated by NACA, Gust Loads Division, Langley AFB, Virginia.

Flight data from the several sources are combined and tabulated by NWRF personnel, checked for consistency, and forwarded to the National Weather Records Center (NWRC), Asheville, North Carolina. At NWRC the tabulated data is entered on IBM cards and machine computations of wind and other meteorological parameters are made for each flight observation point. Included in the final computations, which are returned to NWRF along with the original data are the following: time, position, various measures of temperature, pressure, humidity, altitude, wind and vertical acceleration. Additional data on cloud and contrail conditions are included.

Some of the NWRF projects are done "in the house" and some are farmed out. The raw jet stream data is processed partially by the research facility and partially through contract to a research organization.

Under sponsorship of a Navy Weather Research Facility contract, the University of Chicago recently developed a new method of representing and forecasting high-level winds based on vertical integration of certain parameters of the jet stream region. This system, which involves the analysis and forecasting of a "Layer of Maximum Wind" (LMW), has been further tested and applied at NWRF with considerable success. It is understood that the U. S. Weather Bureau plans to adopt this system to depict and forecast jet stream winds for the coming commercial jet age.

To bridge the gap between jet wind forecasting and operational planning, an optimum flight planning and navigational system has been developed for long range jet flights. This system was tested very successfully with the assigned A3D during the spring of 1957 transcontinental flights.

NWRF personnel are now conducting an expanded study of the jet stream to develop relationships of LMW features to surface weather systems and their forecasting.

For several years Pan American World Airways, under contract to NWRF, has investigated and catalogued the climatology of the jet stream over the Northern Hemisphere. Based on experience and data obtained from commercial trans-Pacific flights, PAA meteorologists have compiled several technical studies and a Pacific Ocean jet stream forecasting manual for Navy aerologists.

Certainly the Navy jet stream research program has provided increased understanding of these unusual "rivers of the sky" and provided a new insight into military weather forecasting and jet aviation operational problems.

FROM CATAPULT *to rendezvous with thirsty teammate in short order is routine with VA-151 deployed aboard USS Bennington (CVA-20). Flying FJ-4B Furies, squadron claims "first" in full utilization of Buddy Tanker Refueling System on operational flights. Use of probe-drogue engagement method enables consistent hook-ups even under conditions of turbulence, low visibility, altitude and darkness.*

New Altitude Record Made

Navy Target Aircraft Flies High

A ground-launched U. S. Navy XKDB-1 target aircraft, designed and built by Beech Aircraft Corporation and powered by a 120 hp McCulloch turbo-supercharged engine, flew to 42,000 feet to set a new unofficial high altitude record for remote-controlled targets in the medium performance class.

Flown at the Naval Air Missile Test Center, Point Mugu, Calif., the XKDB-1 topped by some 3500 feet the previous record set in 1957 by a similar XKDB-1. The 600-pound target is undergoing Navy technical evaluation for fleet suitability.

Designed for surface-to-air and air-to-air weapon systems evaluation and training, superior performance capabilities of the XKDB-1 make it compatible with these missile firing missions. It has a speed of 300 knots, endurance in excess of an hour, and control range of more than 50,000 yards.

The XKDB-1 system includes a Beech designed portable zero-length launcher, capable of land or shipboard use.

Harmon Winners Named

Cdr. Hunt, Gen. LeMay are Chosen

Cdr. Jack R. Hunt has been named lighter-than-air winner of the Harmon international award for making the first nonstop round-trip crossing of the Atlantic in an airship. He made the flight March 4-16, 1957.

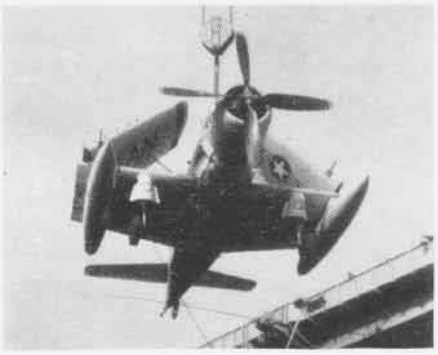
He will be given the trophy later in the year, as will Gen. Curtis E. LeMay, Air Force vice chief of staff, who was named outstanding aviator. Gen. LeMay made a 6323-mile flight in jet tanker from Westover Air Force Base, Mass., to Buenos Aires November 11-12, 1957.

Cdr. Hunt, attached to the Naval Air Development Unit at South Weymouth, Mass., piloted a Navy non-rigid airship 9448 miles in 264 hours without refueling in the first nonstop round trip across the Atlantic. He took off from South Weymouth and returned to Key West, Fla.

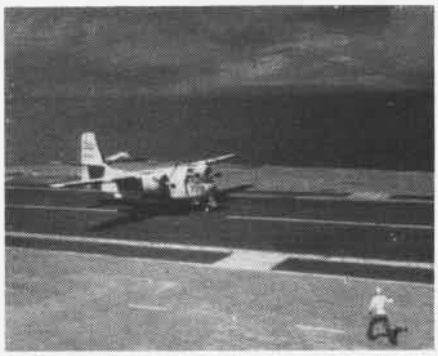
Harmon trophies are awarded annually for outstanding achievements in aeronautics, in memory of the late Clifford B. Harmon, pioneer aviator and balloonist, who died in France in June of 1945.

● Since the end of WW II, employees of NASD PHILADELPHIA have donated more than 16,000 pints of blood; enough to fill a tank car.

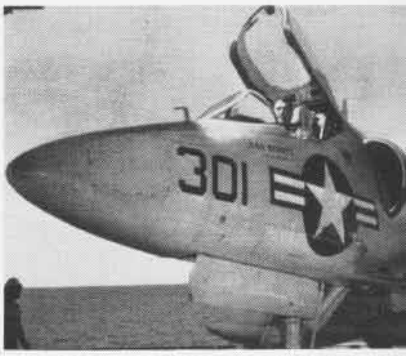
ROCKET-POWERED *jump belt worn by soldier at left, developed by Reaction Motors Division of Thiokol Chemical Corporation, might enable troops to achieve an element of mobility they have never enjoyed. Ed Kurczewski, Test Stand Assistant for Reaction Motors, demonstrates a power-assist leap at right, using an early version of the jump belt. He carried equipment weighing approximately 30 per cent of his own weight, yet vaulted to distance of 20 feet.*



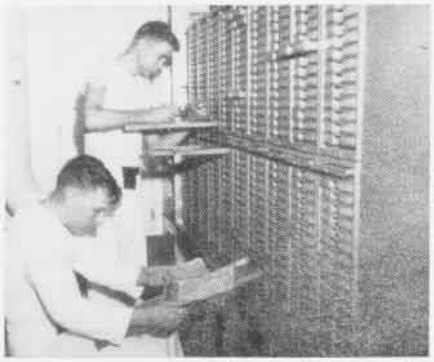
RAISED TO FLIGHT DECK OF RANGER BY HOIST IS A DOUGLAS AD-6 FOR VA-16



ATF TRADER MAKES ITS FIRST ARRESTED LANDING ABOARD THE RANGER



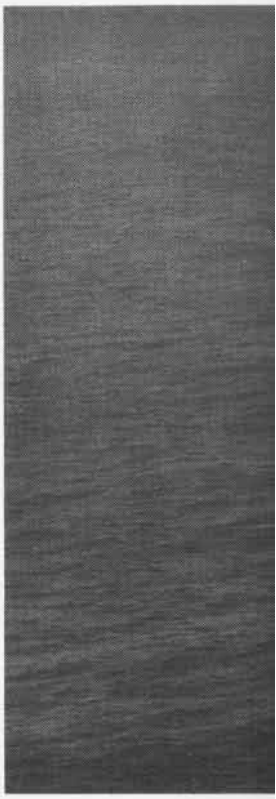
NO. 1 A4D DEPLOYED ABOARD RANGER H CDR. DEPUTY, VA-12 CO, AS PIL



STOREKEEPERS ARE ENGAGED IN REGULAR TASK OF KEEPING STOCKS UP-TO-DATE

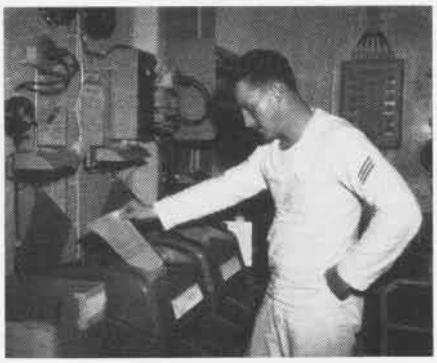
CVA 61 RANGER

The eighth of a line of ships to bear the illustrious name of Ranger, the big attack aircraft carrier upholds the Navy tradition of ships manned by specialists who know their job thoroughly. The strength of CVA-61 is the officers and men of many skills who execute their tasks efficiently.



RANGER PERSONNEL HANDLE SHELLS FOR THE 5/54'S DURING AMMO REPLENISHING

NOW WARMING UP, THESE SKYRAIDERS ARE READY FOR A MORNING LAUNCH



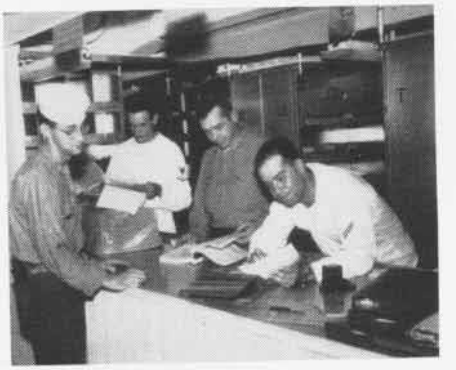
AIRMAN W. J. GRIBBEN NOTES WEATHER INFORMATION RECEIVED ON TELETYPE

NAVAL CIC OFFICER, LCDR. J. FAIRBANKS GETS INCOMING DA

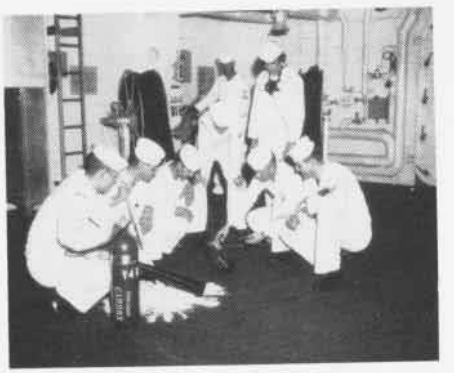
GLAD HAND IS EXTENDED BY CAPT. BOOTH FOR FIRST JET LANDING ON CVA-61

ELEVATOR NO. 3 IS READY TO TAKE AIRCRAFT TO THE HANGAR DECK FOR VA-12

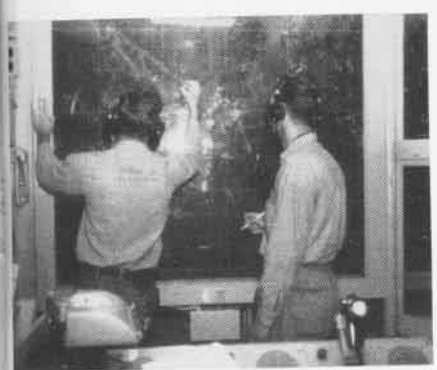
READY TO TAME HIS TIGER IS LCDR. JIM HOLBROOK, THE SKIPPER OF VF-21



THERE'S A RUSHING BUSINESS IN OFFICE SUPPLIES ABOARD THE CARRIER



CORRECT PROCEDURE FOR USING A FOAM NOZZLE IN EVENT OF FIRE IS SHOWN



EARLY AND LATE, BOGIES ARE CAREFULLY PLOTTED IN THE RANGER'S CIC

WITH SPECIAL COMPUTER, OPERATOR TRACKS AN A3D'S FINAL APPROACH

SHORE-BOUND LIBERTY PARTY IS OFF FOR VISIT TO GUANTANAMO CITY, CUBA

LET'S LOOK AT THE RECORD

Log 36,000 Ups and Downs

Back Seat Drivers Thrive at Barin

Out of the Alabama country comes a unique tale of six Naval Aviators who get paid for flying low and slow —constantly that is.

At NAAS Barin Field, the six fliers, who are properly labeled Field Carrier Qualification Demonstration Pilots—"Demo" for short—ply the interesting trade of introducing student pilots to the delicate art of field carrier landing practice (FCLP).

Shown in the accompanying photo are (back row) LCdr. I. L. Linder, squadron XO, LCdr. W. Tarbox, CO, and Lt. H. Avery, (front row) Lt. K. Hammond, Lt. P. Lorge and Lt. M. Merkle

Each pilot has at least 6000 dual rear seat landings; approximately 2000 in SNJ's at an average speed of 58 knots, and the balance in T-28's at a speedier average of 78-80 knots. All of them have been acting as back-seat ballast during the initial phase of student carqual training for the past 18-24 months.

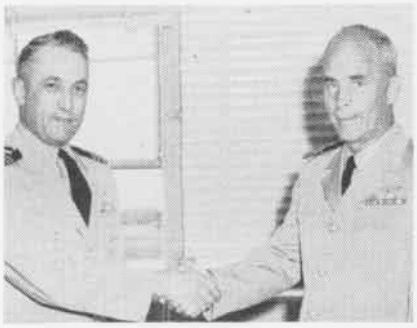
A typical day finds the Demo pilot up at 0430 and in harness at Bronson, an outlying field, at 0530. The first of his four hops is usually launched at 0600 and the last about 1100. Briefings and debriefings are conducted between each hop.

One common groan factor agreed on concerns heat. Since the canopy of the T-28 trainer must be closed to facilitate communications between student and the Demo instructor, cockpit temperature in the summer season sometimes reaches a brisk 130 degrees.

All of the pilots are former VF or VA aviators from the Fleet and are now attached to Basic Training Group Five at NAAS Barin Field, Foley, Ala.

COUNT 36,000 BOUNCES AT BUSY BARIN

DONALD A. QUARLES, *Deputy Secretary of Defense is welcomed by VAdm. A. M. Pride, Commander Naval Air Force Pacific Fleet, to North Island. Mr. Quarles made a five-hour tour of San Diego defense installations.*



CAPT. GEORGE P. KOCH *(R), ComFAirWing Three, congratulates Cdr. Floyd F. Reck, commanding officer of Patrol Squadron 23, whose Brunswick-based planes set a 90-day flight mark of 3016.5 hours for new wing record.*

Antarctic Aviator Cited

Spotted Crevasses by Helicopter

Marine First Lt. Leroy S. Kenney has been presented the Air Medal for observation and supply missions he flew during Operation *Deep Freeze II.*

When a tractor party was halted by a dangerous and heavily crevassed region between Little America and Byrd Station, Lt. Kenney detected and marked crevasses with a helicopter. His efforts saved an estimated 45 days in the tractor train's supply journey.

The citation was signed by the Secretary of the Navy and presented by Cdr. W. Goodwin, executive officer at Whiting Field, where Lt. Kenney has been assigned since his tour on the ice.

KENNEY GETS MEDAL IN WHITING CEREMONY

Aviation 'First' Claimed

Command Changes at 40,000 Feet

Another aviation "first" has been claimed. Command of Fighter Squadron 211 was changed with both participants flying at 40,000 feet above the USS *Midway* at 1000 mph.

Cdr. W. A. Golden replaced Cdr. D. C. Davis as commanding officer of the "Fighting Red Checker Tails" as the *Midway* steamed off California.

4000th Landing is Made

HUP Lands Aboard Wasp off Crete

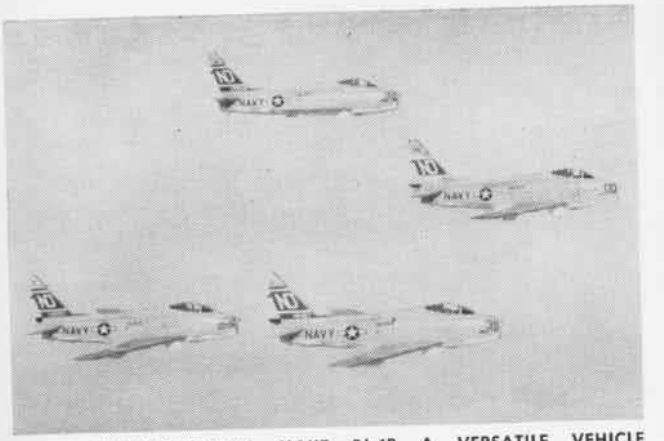
Ltjg F. E. Shirley made the 4000th helicopter landing on board the antisubmarine carrier USS *Wasp* when he landed an HUP "angel" on the ship in Souda Bay, Crete. Cdr. J. L. McMahon, Jr., the *Wasp's* air officer, was a passenger in the rescue helicopter.

Efficiency Demonstrated

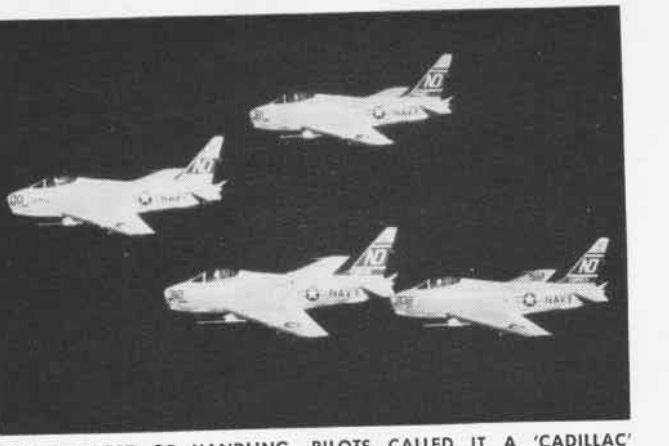
Crew Quells Off-station Fire

Efficiency of the crash crew at MCAS Miami was demonstrated when the station responded to a civilian request for help in fighting a gasoline fire at the entrance of the Sunshine Parkway. The station crash crew arrived after civilian firemen had battled the blazing 8000-gallon refueler for nearly an hour.

Within five minutes of its arrival, the Marine crew had doused the fire with 24,000 gallons of foam and had the raging fire under absolute control.



FLIGHT CHARACTERISTICS MAKE FJ-4B A VERSATILE VEHICLE



FOR ITS EASE OF HANDLING, PILOTS CALLED IT A 'CADILLAC'

TRAINING AGAINST A DEADLINE

Ltjg. J. W. Peterson, USNR

TIME IS short! You have a new airplane! You must be carrier-qualified and meet a deployment schedule! These are your problems! Can you do the job?

Early in the summer of 1957 VA-214 faced this situation. It had a new aircraft, the North American FJ-4B, partially qualified pilots, and only six short months to prepare for WestPac deployment aboard the USS *Hornet*.

The training cycle for deployment was rolling along smoothly, the halfway point had been reached. Then on 17 June 1957 came word of a change of aircraft. The Navy's new FJ-4B light jet attack aircraft would be assigned to the squadron. F9F pilots must qualify in the new *Fury*.

That was good news, but the big question was: Could the squadron be ready for deployment by January 1958?

VA-214 hurriedly started to checkout and retrain in the new attack *Fury*. Lectures by an instructor from VF(AW)-3 plus maximum use of an FJ-4 maintenance trainer helped, but published information on the new aircraft was scarce.

The solution to that one was a visit to the source. In tired but trusty *Cougars*, a round-the-country trip was made to the North American plant at Columbus, Ohio; to Washington, Patuxent River, Albuquerque, and China Lake. From the engineers, project officers, and test pilots of the FJ-4B, two squadron pilots gathered technical data and operational advice for the safest, most effective fleet use of the new plane.

By the end of July, one day after receiving the final one-third of their aircraft, the *Volunteers* deployed to Fallon, Nevada, for familiarization and basic weapons training. Six weeks later, their fundamentals successfully completed, they went aboard the USS *Hornet*, the first squadron to qualify at sea in an FJ-4 type aircraft.

Carrier qualifications and full load launches were doubly difficult because the FJ-4B was designed for steam catapults and had never been launched from a carrier by the rougher, less powerful hydraulic catapults which the *Hornet* retained. However, the *Volunteers* did qualify without a scratch to their planes.

Training continued: more bombing, navigation, FCLP, and tactics. Pilots and men alike became strangers to their families at Moffett Field, as they slipped up and down the Pacific coast like nomads of the Sahara, seeking mastery of their mission.

Headaches were numerous for squadron department heads like LCdrs. P. J. (Grey Fox) O'Keefe, Jack Anthony and Lt. Bill Davis. O'Keefe's Operations Department became a slave mill in order to insure operational readiness. Anthony's maintenance personnel, led by Chief E. W. Ervin, fought and mastered the inevitable "new plane" problems to produce needed availability. To Davis' Weapons Department went the responsibility for weapons and fire control systems, and the training of pilots in their use—a job for which they won "Outstandings" in every inspection.

Christmas holidays arrived, but the well deserved rest period before deployment to WestPac was interrupted by a crisis in Indonesia. This placed the weary *Volunteers* on a 48-hour standby vigil and delayed all Christmas leave. On January 6, 1958, Air Task Group Four waved "Goodbye" to their families and friends, and headed through the Golden Gate for a Western Pacific cruise as members of the famed Seventh Fleet.

The last hurdle to success, the Operational Readiness Inspection or ORI, was held in Hawaii. Here the *Volunteers* proved to the Commander Fleet Air Hawaii inspectors that the job of preparing for deployment in a shortened period with a new aircraft can be done with maximum effort and careful planning. ORI placed the *Volunteers* in the "Excellent" category and proved they were ready.

VA-214 *Volunteers* look back with tremendous satisfaction on their accomplishments in the Far East and the months of strenuous preparation that preceded. The training months were gruelling, exciting, and adventurous, filled with action and sweat, thrills and frustrations, good times and bad. As the squadron approaches its decommissioning, under a major reorganization of carrier air groups, every member of the team knows his outfit has met a major challenge well and that he has helped to do it.

Student Visits Encouraged

Correspondence Center is Open

The Navy's Correspondence Course Center encourages personal visits from students, not only to show them how the Center operates, but also to give them on-the-spot assistance in correspondence course problems.

A student assistance unit is maintained to aid students in checking their records, reviewing questions, or obtaining satisfactory completion stamps or letters. In addition, students may bring in assignments to be graded "while you wait" or they may also enroll in courses provided they have an application form properly filled out.

The Center is located across the Mohawk River from Schenectady, New York, on State Route 5, near Exit 26 on the New York Thruway. Working hours are 0800-1630 Monday through Friday. Naval aircraft may land at the Schenectady Country airport and receive limited services at the Air National Guard (gas, oil, weather, clearances, etc.) There are no BOQ's or barracks in the area, but accommodations are available in hotels, motels, and the YMCA.

Although the Center does not work on weekends or National Holidays, a duty section of Military Personnel is maintained and assistance can be offered on these days if the Center is notified in advance. (No classified courses may be checked out on nonwork days).

Seaplane Base is Begun

NAS Harvey Point will Get P6M's

Ground has been broken for construction of a multi-million-dollar jet seaplane base at Harvey Point, N. C. It will be designated NAS HARVEY POINT.

Built to accommodate the P6M *Seamaster*, the station is expected to be completed sometime in 1960. It will occupy 1264.5 acres and will employ approximately 2700 military and civilian personnel.

RAdm. F. Massie Hughes, Commandant of the Fifth Naval District, introduced the Honorable Herbert C. Bonner, Congressman from the First District of North Carolina, principal speaker at the ground-breaking.

Harvey Point is located in North Carolina's "Tri-city" area, bounded by Elizabeth City, Hertford, and Edenton.

KEITO SUZUKI ARRIVES FOR SAFETY TAPE

Safety Campaign Launched

VR–21 Unit Lends Japanese a Hand

The "Save a Life" campaign initiated by the VR–21 detachment at NAS ATSUGI last year has been repeated. Thousands of Japanese citizens flocked to the air station this year to have bicycles, motorcycles and carts equipped with light-reflecting tape.

In addition to applying safety tape, VR–21 sailors helped to install and focus sealed beam headlight units in Japanese autos. Local police and civic officials have welcomed the program.

Barin Field Will Close

$1-million to be Saved Annually

NAAS BARIN FIELD will be disestablished about November 1.

A reduction of nearly one-third in the Navy's pilot training rate, coupled with the planned transition to jet aircraft in basic flight training, will bring about the closing of BARIN FIELD, the second air station of the Basic Air Training Command to be closed. Plans for disestablishing CORRY FIELD at Pensacola were announced in February.

BARIN FIELD's closing will allow the Navy to reduce expenditures by some $1-million annually to remain within funds allotted to the aviation shore establishment.

Nearly 1600 military personnel, supporting approximately 330 officer student pilots and aviation cadets, will be made available for transfer by the closing.

In addition, some 140 civilian employees are affected. They will receive transfer, placement or re-employment rights in accordance with applicable Civil Service regulations. Navy officials will extend all practicable assistance to them in locating work for which they are fitted.

Approximately 185 aircraft are based at BARIN FIELD. They will be distributed as necessary among other air stations in the air training command.

Safety Device Invented

Prevents NC-5 Unit Overheating

A simple safety device which is intended to safeguard the power plant of the NC-5 mobile electric power unit in the event of overheating or loss of oil has been developed by FASRon-104. The basic idea is to open the loss voltage ignition line by two automatic sensing devices, one located in the coolant system and one in the oil pressure system.

The device automatically turns off the ignition when the engine heats to approximately 205-210 degrees Fahrenheit or when the oil pressure drops below 15 pounds per square inch.

Saving becomes obvious when the cost of modification is compared to replacement cost of one engine. One engine failure costs in the neighborhood of six hundred dollars.

All parts used in the project were normal supply items procured for $20. Labor involved only the installation of these parts and was accomplished by FASRon-104's machine shop personnel and the NAESU field engineer.

New Radio Astronomy Lab

Navy Locates it in West Virginia

A $60,000,000 radio astronomy facility, known as the Naval Radio Research Observatory, will be constructed in the mountains of West Virginia near Sugar Grove.

The project, scheduled to begin in mid-August, will culminate 11 years of research in the field of radio astronomy by the Naval Research Lab.

The 1500-acre facility will be the site of a giant radio telescope used in receiving electronic emissions from outer space, and will contribute greatly to basic knowledge of the complex physical processes that occur in the outer space.

NRRO will be one of the foremost scientific tools available, not only in studies of outer space, but also in advanced scientific research on characteristics of the earth's atmosphere, and geodetic and geomagnetic data on the physical earth itself.

Subroc Contract Awarded

Goodyear Named Prime Contractor

A $65-million contract for research and development work in connection with *Subroc*, a new antisubmarine missile system, has been placed with the Goodyear Aircraft Corporation by the Bureau of Ordnance.

The contract covers the complete weapons system, including production and tooling methods.

The new weapon is an underwater guided missile which may be fired from above or below the surface. The *Subroc* system can detect a submarine at long range, compute its course and speed, and fire the missile.

The missile is propelled through the air by a powerful rocket; the spent rocket drops away and the warhead continues on to the target. The weapon can destroy enemy targets in an area of many square miles around the launching submarine.

Subroc is under development at the Naval Ordnance Laboratory, White Oak, Silver Spring, Md. Under terms of the contract, Goodyear Aircraft will be prime weapons system contractor and will work with Navy scientists at the Naval Ordnance Laboratory.

Principal subcontractors who will be working with Goodyear Aircraft are Librascope of Glendale, Calif., and the Kearfott Company, Clifton, N. J.

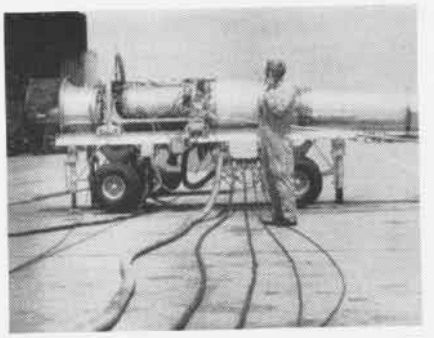
New Test Stand in Use

Man Hours are Saved During Check

A new portable, universal turbojet engine test stand has been provided to selected Naval and Marine activities for field evaluation. Marine Aircraft Repair Squadron 27 at MCAS CHERRY POINT has found that use of the stand has saved many man-hours in the usual time-consuming task of checking an engine.

The stand, as built by the Air Logistics Corporation, costs approximately $60,000 with one set of engine adapters and harness. Additional sets of adapters and harness cost approximately $2500 each.

The stand is a complete test system and has four major component items which are easily packed for air or overland transportation. These items are the engine control console, the fuel tank, and fuel flow metering equipment, and the accessory load banks.



TEST STAND IN SERVICE AT CHERRY POINT

The engine control console and the fuel tank system are mounted on a single trailer and the test bed is also a trailer unit for portability. Automatic engine starting and monitoring equipment is included to prevent "hot" starts and engine overspeeding.

The test stand is adaptable for the J-71, J-65 and J-57 jet engines.

Speedy Air Defense Test

VF-142 Pilots Fly in CONAD Drill

The combination of VF-142's "Fighting Falcons" and the F8U-1 *Crusader* elicited considerable praise from controllers of the 27th Air Division of the Continental Air Defense Command (CONAD) recently.

Eight squadron pilots participated in the air defense exercise as part of an augmentation training program run by CONAD.

Termed a "graduation" exercise, the group engaged in simulated intercept missions by two aircraft at extreme range under GCI control, recovery at the nearest alternate base and return to home base at maximum speed for rearming.

Eight pilots, flying from San Francisco, Fallon (Nev.), Las Vegas and Phoenix (Ariz.) to San Diego, averaged 791 mph.

Cdr. G. H. Whistler, Jr., commanding officer of VF-142, said, "My pilots and I are extremely proud of the *Crusader* and its performance."

Typical of the CONAD controllers remarks regarding the *Crusader* were: "What a rate of climb! . . . That's the fastest intercept we've ever made."

FIGHTING FALCONS, BACK FROM THE HUNT

New Crash Truck Arrives

Can Attain 60 mph in 40 Seconds

An improved MB-5 crash truck has been placed in operation at several Navy and Marine Corps air stations. It is equipped with an automatic Allison transmission which permits six speeds forward and one reverse.

The 16,200-pound vehicle can attain 60 mph in 40 seconds. It carries 400 gallons of water and 25 gallons of foam concentrate.

A variable adjustment feature of the turret foam pump makes possible any desired pattern from a solid stream of 3000 gallons of foam per minute with a range of 170 feet to a widely dispersed pattern of 3000 gallons per minute for close-in work. This makes it possible for the truck to cover a burning aircraft with a blanket of flame-smothering foam within two or three minutes.

In addition to its foam capability, the truck is equipped with three portable dry chemical extinguishers for gasoline spill and hydraulic fluid fires. The truck has 50-pound CO_2 extinguishers for fighting engine fires and two magnesium extinguishers for putting out magnesium fires.

An automatic transmission eliminates the clutch and will reduce training and maintenance as well as simplify operation problems, according to a Bureau of Aeronautics spokesman.

Veteran Secretary Retires

Miss Rock Leaves after 38 Years

Miss Winifred Rock who has spent nearly 16 years as secretary in the Training Division office of DCNO (Air) has just retired. Her 38 years in government covered work at the Interstate Commerce Commission and the Civil Aeronautics Board. Her first boss when she transferred to the Navy Department was Adm. A. W. Radford, then a Captain.

Miss Rock will spend her summers at Fire Island, New York, but travel and residence in Arlington are on the schedule the rest of the time.

HU-871 ASHORE, AFLOAT, ALOFT

#990 CO-PILOT PREPARES TO DROP FREEDOM CHIT TO FAETUPAC SURVIVAL STUDENTS

CDR. EWING, CENTER, HELPS CHART COURSE FOR FIRST HU-871 SURVIVAL MISSION

HOVERING DIRECTLY ABOVE HELO-PAD, #990 IS READY TO LAND ABOARD THE ESTES

FOR THE SECOND year in a row, Naval Air Reserve Helicopter Utility Squadron 871 spent their two-week active duty training period at NAAS REAM FIELD, Imperial Beach, California. The 1958 cruise was highly successful for the NAS OAKLAND-based squadron. Once again they demonstrated that they can function effectively with the Fleet on short notice.

The ten pilots, whose civilian occupations include salesman, engineer, air lines pilot, lawyer, accountant, teacher, student and food procurer, flew a total of 620 hours, an average of over 60 hours per pilot. A maximum training schedule was followed by the pilots in two SNB's, one SNJ and three HUP-2's. Excellent maintenance on the part of crewmen permitted high availability.

Operational efficiency was emphasized rather than the mere logging of flight time. Each pilot was assigned a crewman and they worked together as a team. This developed an enthusiastic competitive spirit.

HU-1 from Ream Field and FAETUPac survival school arranged search and rescue exercises for HU-871. Seven simulated rescue missions were flown over rugged, unfamiliar terrain to Warner Hot Springs 60 miles away. There, the Weekend Warriors "saved" survival students who were living as airmen downed behind enemy lines under actual wartime conditions. Each team made three hoists.

In addition, HU-871 was indoctrinated in helicopter shipboard operations. The amphibious force flagship, USS *Estes* (AGC-12), provided personnel and flight deck for landing practice. The ten pilots each made five landings while the enlisted personnel participated in all phases of flight deck operations. Eleven men qualified as landing controllers.

HU-871, commissioned in 1952, was the first helicopter squadron in the Naval Air Reserve Training Command. It has retained 90% of its original personnel in the past six years. This is a tribute to the high morale within the outfit and accounts for much of its operational proficiency. Cdr. Harry Ewing, skipper, termed the Ream tour, "best to date."

BARTU OFFICERS *meet BuAer Chief, RAdm. R. E. Dixon, first row second from right. Cdr. L. F. Steffenhagen stands to the left of him.*

NEW JERSEY *Governor R. B. Meyner, LCdr., USNR, chats with homestater Ltjg. D. H. Shader, CVG-15 jet pilot, at NAS Atsugi, Japan.*

THIS IS TRAINING TOUR TIME

NAVAL AIR RESERVE training knows no season. With the advent of summer, however, there is a real increase in active duty training cruise activity.

The two-week tours vary greatly but all are planned to further the Navy policy of keeping Naval Air Reservists in a constant state of operational readiness.

For example, the mission of Bureau of Aeronautics Training Units is to provide a trained force of Reserve personnel to BuAer and its facilities in time of national emergency. Therefore, over 30 officers from BARTU's throughout the country spent 14 days headquartered at BuAer, as part of a continuing program to familiarize BARTU men with Bureau functions.

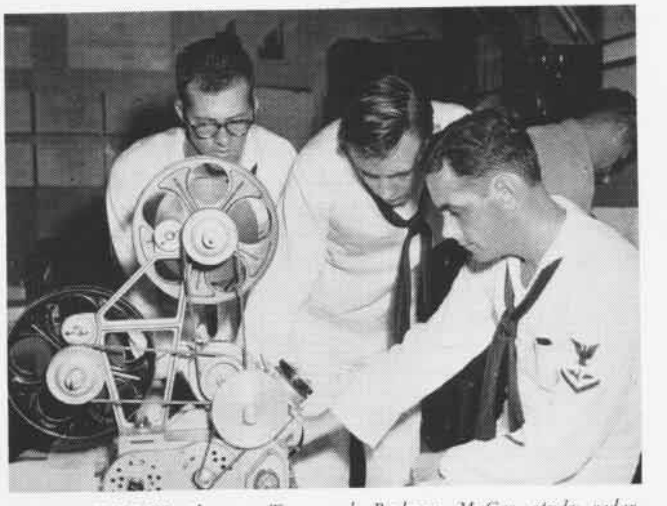
The officers underwent a thorough BuAer orientation course and went on field trips to NATC PATUXENT RIVER, NATTS TRENTON, NAMC PHILADELPHIA and aboard the *Forrestal*.

In keeping with the increased emphasis on ASW training, the Naval Air Reserve Electronics Training Unit at NAS Los ALAMITOS now gives a course for a specific aircrew position in the S2F. Thirteen *VS-721* men from NAS GLENVIEW were the first to attend the school. Outstanding results were achieved by the Chicago area Reservists who returned to *VS-721* more fully prepared for their highly specialized roles as S2F aircrewmen.

Four Weekend Warrior Weathermen on annual cruise from NARTU ANACOSTIA were given an inside look at some of the rougher aspects of their trade. They saw VW-4's famous Hurricane Hunters in action at NAS JACKSONVILLE. The three men and a WAVE, Lt. Katherine Hinman, are attached to AWS-66.

Gov. Meyner spent his active duty touring Far East military installations.

NARETU INSTRUCTOR *Dean Mitchell, center, applies electronics theory for VS-721 men, Hirst, Braun, Reeder, Twitchell at NAS LosAl.*



WASHINGTON *Weathermen Townsend, Rodgers, McGee, study radarscope movies taken during penetration of hurricane by a VW-4 Neptune.*

Helicopter Pilot Cited

Evacuated 26 Bodies After Crash

Marine First Lt. James R. Lindsay has received the Air Medal for helicopter flights he flew in the Philippines when President Magsaysay and several members of his party were killed in March last year.

The award was presented by LCol. Walter E. Gregory, Commanding Officer of Marine Helicopter Transport Squadron 263 at Jacksonville, N.C.

Lt. Lindsay was on maneuvers with the First Marine Aircraft wing at the time of the crash. He was stationed at Sangley Point on air-sea rescue duty when he was summoned to Cebu to take part in the search.

On arrival at Cebu, Lt. Lindsay and his crew made 48 trips to and from the wreckage and took out the bodies of all 26 victims. He flew the four dozen flights over unfamiliar, mountainous terrain, which threatened his fuel reserve and which challenged his ability as a pilot.

Adak Upper Wind Sounding

Unit Makes Outstanding Record

During a scheduled Rawinsonde observation by Naval Weather Service personnel at NS ADAK, Alaska, the balloon-borne flight instrument was tracked by the ground measuring device to the altitude of 152,822 feet (about 29 miles). This was the maximum computed height to which the instrument could be tracked as it reached the pressure level of one millibar.

According to Cdr. James W. TenBrink, Meteorological Officer at Adak, an average sounding terminates between 70,000 and 100,000 feet owing to the bursting of the balloon as it expands during its ascent or owing to failure in the flight instruments or ground equipment which results in loss of signal. Although an all-Navy record height was not achieved on this sounding, it is particularly noteworthy in view of the strong upper winds usually encountered over high latitude stations.

Unit that made the outstanding record at Adak was composed of Aerographer's Mates Dale R. Barnett, James E. Gadow and Dale A. Clay. The high altitude mark was made during operations in connection with the International Geophysical Year Program.

BLIMP LINE HANDLER HAS SPACEMAN LOOK

Blimp Recovery is Safer

Light Designed for Line Handlers

A problem formerly encountered in night-time airship recovery has been solved by Airship Airborne Early Warning Squadron One at NAS LAKEHURST. An illumination device has been designed for the two-man team of line handlers who meet the airship while it is still in motion, catch the blimp's trailing lines, and pass them to ground handlers.

A hard hat innerliner, with a safety light from an old life vest attached to the top, makes the runners more visible to the pilot and ground handling crew, making the night ground handling operation safer and faster.

VA-106 Receives A4D-2

Douglas Plane Replaces Cougar

The *Gladiators* of VA-106, NAS CECIL FIELD, who took second place at the annual Naval Air Weapons Meet in the field of light attack, have received a new aircraft. The Douglas A4D-2 replaces the Grumman F9F-8 *Cougar*. Primarily designed for nuclear weapons delivery, the A4D is the smallest operational carrier-based aircraft in the fleet.

The squadron flew the *Cougar* for two years, nine months. During that time, VA-106 was deployed to the Mediterranean for six months aboard the big fleet aircraft carrier *Coral Sea*.

Most notable achievement, according to the squadron, was the establishment of a new record for number of individual "E's" won by a Naval jet attack squadron in one training cycle.

LCdr. Newton P. Foss, new skipper of the *Gladiators*, accepted the first A4D-2 *Skyhawk* for the squadron.

Sperry Develops System

Will Help X-15 Pilot in Flight

Sperry Gyroscope Company has developed an advanced flight instrument system for the hypersonic X-15 research aircraft.

Principal function of the system is to help the X-15 pilot control his rocket plane to prevent it from burning up by re-entering denser atmosphere too steeply, or 'bouncing back' too high from too shallow a trajectory. The system will also feed electronic information into airborne recorders to chart each flight.

The X-15 is under development for the Air Force by North American Aviation, Inc., for an initial flight expected next year to an altitude of more than 100 miles at a speed of about 3600 mph (Navy's contribution to the X-15's development, NA-NEWS, March 1958).

The new flight instrument system would receive its severest test when the research rocket returns to the earth's atmosphere from space.

The instrument system which has been under development for about a year will be turned over this summer to NACA for preliminary tests to check its performance at high altitudes and supersonic speeds. A McDonnell F-101 *Voodoo* fighter will be used as a flying test bed. Tests on the X-15 are scheduled next year.

The system will provide the X-15 pilot with inertial flight aids and sensing devices on the trip to outer space. The system is composed of a three-gyro stable platform which provides critical altitude, velocity, distance and altitude sensing, and a lightweight computer that digests and interprets the data. It is designed to meet space and weight problems and cannot be jammed during operation. It was developed to withstand accelerations in excess of ten times the force of gravity.

The system may be adaptable to other forms of missile guidance and space experiments that are being considered.

REGULUS II OPENS RANGE

THE NEEDLE-NOSED *Regulus II* missile built by Chance Vought, has been fired from the Pacific Ocean 300 miles across California and into Nevada to put the Navy's Inland Missile Test Range in operation for the first time.

Flanked by a pair of Vought-built Navy F8U-1 *Crusader* fighters flying "chase," the big bird blasted off the launch pads at the Naval Air Missile Test Center at Point Mugu on the California coast, climbed for altitude over the Pacific, then angled inland.

Zeroing in on a high-altitude course over unpopulated mountain and desert areas, the missile roared to its destination at Antelope Dry Lake, near Tonopah, Nevada. There, on the hard-packed sand of the dried-up lake bed, *Regulus II* was set down, by aerial control from a TV-2 aircraft, on the tricycle landing gear built into the test versions of the missile.

The launch was conducted by Guided Missile Unit 55 under command of Cdr. I. E. "Dutch" Wetmore. It was the first *Reg II* launch by an all-Navy crew. Previous tests had been conducted by Chance Vought personnel.

The flight had dual significance: It opened for intensive future use the 500-mile-long Inland Range. It also signalled the beginning of a new and final phase in the *Reg II* test program before the big bird is ready for operational duty as a weapon of the U. S. Fleet.

The Inland Range establishes a unique test situation for *Regulus II*. Missiles are traditionally fired from shore out over the ocean. But with the new range available, *Reg II* will fly from the ocean's edge inland—much as a missile would in an actual attack.

The Inland Range provides test advantages no sea range could offer: Check points, located with an exactitude impossible at sea, will be set up to appraise the extreme accuracy of the *Regulus II* inertial guidance system—the accuracy which makes *Reg II* useful against small, heavily defended tactical targets for which less-accurate ballistic missiles would be inappropriate.

Beginning of *Reg II* test operations by the Navy marks a new milestone in the missile's rapid progress to weapon status. Soon, *Regulus II* will arm new Fleet ships such as the missile subs *Grayback* and *Growler*, the nuclear-powered underwater boats *Halibut*, and the cruiser *Long Beach*, first nuclear powered United States surface ship.

Regulus II will give these missile bases the ability to lay nuclear warheads on targets more than 1000 miles inland, at speeds beyond Mach 2.

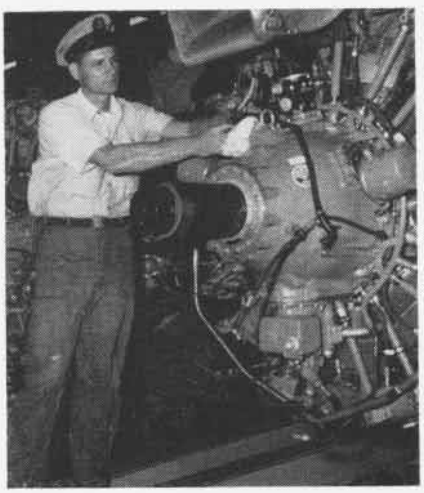
He's Called 'Mister Fixit'

Chief Solves WV Engine Problems

Some mechs are content to repair engines while others insist on eliminating the cause of the gripe. A student of the latter school is Frederic L. Gabbard, ADC, of Airborne Barrier Service Squadron Two.

Never one to stomach repeat gripes on an engine, the chief has invented several devices which ease the maintenance workload in his squadron.

Last year AirBarSRon Two was plagued with repeated failures of manifold pressure transmitters. The cause was engine oil seeping into the flexible line from the blower housing to the manifold pressure transmitter. Oil which collected resulted in erroneous signals being generated by the transmitter and also contaminated the transmitter, making it unfit for future use. Transmitters were in such short supply it was apparent that a solution had to be found soon.



GABBARD TRIES FIX ON R-3350-34 ENGINE

At that point, Gabbard took over. He made several unsuccessful attempts to remedy the trouble, then found that by inserting a hollow probe, with a size 50 hole drilled in the lower side, directly into the blower casing, the transmitter was protected from oil contamination, the trouble removed.

The method has proved so successful that other operators of the R-3350-34 engine in the local area have shown interest, and Wright Aircraft Corporation has requested a sample.

After designing and fabricating a series of templates to help align throttle linkages in WV-2 aircraft, Gabbard turned to the problem of propeller governor conduit failures.

The R-3350-34 engine uses a flexible conduit from the propeller governor junction box to the propeller governor step head motor. Being in an area of severe vibrations, the metallic sheathing on the conduit frequently broke and, in turn, chafed through the wires of the propeller control circuit, causing an uncontrollable propeller.

Now in the process of flight check, Gabbard has a fix that consists of a rigid conduit, substituted for the flexible one. Evaluation is not yet complete, but based on past performance, the squadron is betting on the fix and on Gabbard, a man with ideas.

Citation Awarded Convair

Missile Work Is Praised by Navy

The Convair Division of General Dynamics Corporation has been awarded a certificate of merit from the Secretary of the Navy for "outstanding service to the Department of the Navy in the field of guided missile development and technology."

RAdm. T. A. Ahroon, assistant Chief of the Bureau of Ordnance for planning, made the presentation to Convair president J. V. Naish during a ceremony at the Naval Industrial Reserve Ordnance plant at Pomona, Calif.

The citation said Convair's contribution, "both as an associate contractor in the *Bumblebee* program and later as prime contractor for the major electronic and aerodynamic components of the *Terrier* missile, has been responsible in large measure for the orderly development and early introduction into the Fleet of this weapon."

IN FOREIGN SKIES

Canada to Use Firebees

First foreign nation to use Ryan Aeronautical Company *Firebee* jet drones will be Canada. The Royal Canadian Air Force will use *Lancaster* bombers to air-launch the "flying bullseyes" to evaluate weapon systems.

The RCAF has recently completed flight tests at NAAS BROWN FIELD to confirm the feasibility of using the British *Lancaster* bombers of WW II fame as "mother" launching planes for *Firebees*. The huge bomber launched *Firebees* in flight and was checked for handling characteristics with two *Firebees* suspended beneath its wings, in tests at NOTS, China Lake, Calif.

Results of the tests proved highly satisfactory, and standard operating procedures for drone launching have been established by the RCAF.

Firebees will be delivered this summer to the RCAF Station at Cold Lake, Alberta, major weapons firing range for the Canadian air force. The *Lancasters* will be operated by the RCAF's Central Experimental and Proving Establishment.

FIREBEE MOUNTED ON LANCASTER BOMBER

The KDA-1 *Firebee* being acquired by the RCAF is powered by a Fairchild J-44 1000-lb.-thrust turbojet engine and incorporates a flotation system which makes it fully recoverable from the water after it is parachuted to earth upon the completion of a mission.

Farnborough Show Announced

The 1958 Flying Display and Exhibition at Farnborough will be bigger and better than ever, according to the Society of British Aircraft Constructors announcement.

At the conclusion of last year's show, E. C. Bowyer, Director of the Society, suggested that 1957 had set the pattern for the next few years. Guided weapons would come increasingly into the picture. Service participation would grow in size, and new civil and military aircraft could be expected each year.

In this year's Display and Exhibition, the 19th of its kind, highlights will include several types of new aircraft, the latest missiles, some of them in their operational environment, massed Royal Air Force and Royal Navy participation, more stand space in the exhibition building, and an outside equipment display covering a 30 per cent larger area than last year.

Acceptances so far this year, according to SBAC, encourage the belief that last year's record attendance of more than 7000 VIP's from 120 countries will be substantially exceeded.

Indonesian Trains at Whiting

A personable Indonesian officer has reported to NAAS WHITING FIELD for flight training. He is Maj. Raden Soediarso who comes from Jakarta, Java. He will return to his country as soon as he gets his aviator's wings.

There is no aviation wing of the Indonesian Navy at present, but Maj. Soediarso has plans. The Indonesian Navy has approximately 200 ships, including destroyers, frigates, and corvettes.

Maj. Soediarso has commanded divisions and squadrons in his nation's sea force. The rank of major in the Navy has been unusual, but the Indonesian rank structure is similar to the U. S. Marine grades up through colonel. The top echelon, vice admiral and above, is the same as the U. S. Navy.

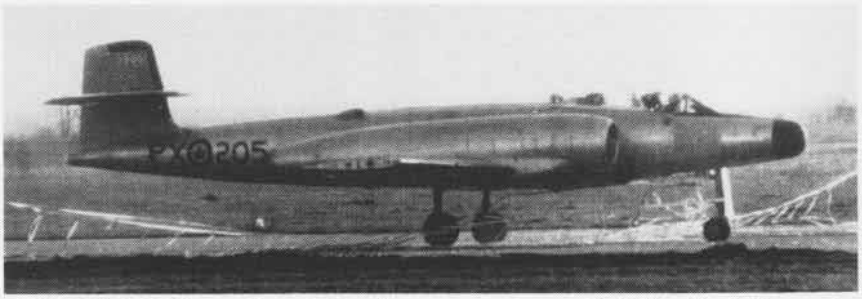
The English language has been his greatest hurdle; but with the help of his instructor, LCdr. G. Sandberg, Squadron Five leader, he is gaining proficiency in its use. He is teaching his instructor a few words of his own language.

His ultimate mission is to establish Indonesian Naval Aviation.

French Wind Tunnels

Four new supersonic wind tunnels, the only ones of their kind in Europe, are being built by the French *National Office of Aeronautic Study and Research*. To be completed by 1960, they are located in eastern France close by an already operating 110,000 hp transonic wind tunnel. The latter, called "S1," which went into use at Modane several years ago, is claimed by the French as the world's most powerful.

The four new tunnels will provide experimental facilities for speeds up to several times that of sound. Over 400 men are working day and night to complete these tunnels. The largest will be 318 feet long, 84 feet wide.



CANADIAN CF-100 *interceptor, speeding down runway at more that 100 mph, is shown a few seconds after its nose wheel engaged the emergency overrun safety arrester during a test at Uplands Airbase near Ottawa. The actuating cable has snapped into action a lower steel cable which is about to catch the main landing gear. The arrester has stopped the 34,000-pound jet at aircraft speeds up to 130 knots. It will be installed at seven Canadian airports.*

SOMETIMES-ON-TIME AIRLINE

By Lt. William B. Bircher

CAPT. CASEY HEADS UNIQUE 'AIRLINE'

THE MEN of Capt. Casey's "Sometimes-on-Time Flying Circus" on Guam don't claim to have the toughest or the most glamorous job in the Navy. Nor do they claim any records for long distance or high altitude flights. Not even on their best days do they dream of breaking a speed record or making the 200,000th landing anywhere.

Their only and continuing boast is that they fly the most unusual cargo in the Navy.

To back up this claim, they offer the following list of cargo lifts and miscellaneous missions: airfreighting toilet seats, nuts and bolts, parts of Quonset huts, a five-day-old baby, a corpse to its resting place, patients for a leper colony, dynamite caps and untold hundreds of pounds of mail to Naval personnel on remote atolls in the Pacific.

There are still other missions: flying emergency rations to a Seabee battalion on an isolated island, air delivery of a few tons of supplies to a typhoon devastated area, day and night all-weather intercept and escort of aircraft in distress to safe landings, and several days of continuous high intensity air search for a downed airplane or a ship in distress.

Mercy flights to most any given spot in the Marianas area to pick up medical patients or to drop emergency supplies are routine missions as are continuous surveillance of dozens of tropical islands to detect trouble, pestilence or plague, maintain teams of search and rescue facilities for thousands of square miles of ocean area. Air transportation to a high level staff conference on Formosa may require executing a rendezvous between an admiral and a four-star general on a tiny 3x5 volcano island.

Capt. Vincent F. Casey's "Sometimes-on-Time" *Tigers* have done all these and are willing to haul anything else that you might have under any circumstances . . . provided, of course, that you can get it into one of their airplanes.

You won't find Casey's "Sometimes-on-Time Flying Circus" listed in the Standard Navy Distribution List or shown on organization charts. It is simply a nickname affectionately bestowed by the personnel of many of the farflung Pacific Islands in the Marianas area on the pilots and airmen of NAS AGANA, Guam.

Primary duty of these officers and men is that of keeping NAS AGANA in operation. Flying logistics and every other type of cargo imaginable to places far off the beaten track is secondary, but, more often than not, takes precedence. The "Sometimes-on-Time" title is derived from the fact that owing to a heavy and widely diversified schedule, there is very often a great deal of unforeseen backing and filling resulting in an operation that is "sometimes on time."

Unpredictable complications take the form of evacuating planes prior to visit by a typhoon, 100% aircraft and crew participation in search and rescue missions, AOCP's (Guam is a long distance out on the supply pipeline) and the ever-present necessity of rearranging the order of flights to fit the limited number of aircraft and crews available in order to meet those never-ending crash programs that are always cropping up.

Capt. Casey, already wearing the two hats of Commanding Officer, NAS AGANA, and Commander, Naval Air Bases, is boss of this "non-scheduled military airline." A veteran of 23 years Navy flying, Capt. Casey admits that keeping the "Sometimes-on-Time" airline on time has presented him with unique problems.

R5D SKYMASTER IS LOADED AT SAIPAN

Operating with an ancient R5D, UF's, and one SNB, Capt. Casey's pilots have never refused a job or missed a commitment . . . delayed a little on occasion perhaps, but never missed.

Cdr. F. J. Johnston, acting Executive Officer and Operations Officer, schedules and keeps the station aircraft on the road to their various destinations, yet he still finds time to be one of the more active pilots.

These senior officers, as well as all the other 16 pilots attached to NAS AGANA "double in spades" at the complex 1000 and one jobs in keeping the air station running in addition to flying the Navy's craziest airline. Not counting watches, pilots at Agana average five primary and collateral duties on the ground as their contribution toward the 24 hours a day, seven days a week schedule at Agana. "Well rounded" billets include assignments from courts to funeral details.

These Navy airmen, accustomed to operating on isolated seadromes and overgrown coral landing strips, have built up a firm reputation for devotion to duty. Even when undertaking a job that will keep them away from home base for many days with nothing more than a tool box and a few spare parts they can carry in a plane, these men deliver the goods, no matter what they may be. They pride themselves that the personnel in many remote places rest confident in the knowledge that in routine and emergency circumstances, they can depend on the men of Capt. Vince Casey's "Sometimes-on-Time Airline."

HOK-1 MISSIONS INCLUDE OBSERVATION, CARGO CARRYING, SAR

NEW GAS TURBINE HU2K-1 HIGH PERFORMANCE NAVY HELICOPTER

KAMAN PERFORMANCE

This is the 16th in a special series of feature stories on the companies which have built and are building aircraft for the aeronautical organization of the Navy.

KAMAN (pronounced as command with the D silent) Aircraft Corporation, Bloomfield, Connecticut, was founded in 1945 by Charles H. Kaman to design and manufacture helicopters embodying a new and different type of rotor control system. A flap mounted on each rotor blade acts as an aerodynamic servo to provide simplicity of construction, ease of control and stability to the rotor blades.

The first Kaman helicopter, a twin intermeshing rotor machine designated K-125, made its initial flight in January 1947. In 1949, the K-190 and 225 were certificated by the Civil Aeronautics Administration for commercial use, primarily as crop dusters.

NAVY PRESENTED K-225 TO SMITHSONIAN

In the latter part of 1949, Kaman Aircraft received a contract from the Bureau of Aeronautics for two K-225 helicopters to be evaluated at the Naval Air Test Center, Patuxent River, Maryland. The aircraft rated high in the tests. In the meantime, Kaman had become interested in the possibility of using gas turbines as power plants. The Boeing 502, producing 190 hp, was the most readily adaptable to copter needs. Engineers from both manufacturers proposed to BuAer that a gas turbine be installed in a K-225.

The Navy agreed and awarded Kaman a contract to conduct the experiment. In 1951 a Kaman K-225 powered by a Boeing 502 took off on its first flight in Windsor Locks, Conn. After six years of yeoman service in advancing the turbine helicopter art, it was presented by the Navy to the Smithsonian Institution as the pioneer of turbine-powered helicopters.

Largely as a result of the K-225 evaluation tests, Kaman Aircraft received a Navy contract in September 1950 to develop and manufacture the HTK-1, which stayed in production until 1953.

1952 marked the first year of production for the HOK-1 utility aircraft,

FIRST HUK-1 PRODUCTION CHECK FLIGHT

and delivery to the Navy for the Marine Corps continues to the present day. Equipped with rescue hoist, litters and external cargo hook, it has been used for saving many airmen downed at sea, and for nighttime evacuations.

The first of the Navy's HUK-1 utility helicopters, similar to the HOK, came off the assembly line in March, 1958. Both aircraft have twin intermeshing rotors and are powered by Pratt and Whitney R-1340 piston engines. However, the HUK-1 carries more extensive navigational and communication equipment, and incorporates Kaman's in-flight-tracking device.

In 1957, as a result of winning a BuAer design competition, the company received a Navy contract to design, develop and produce a prototype quantity of single-rotor HU2K-1 utility helicopters. Powered by a General Electric T-58 gas turbine, it will be one of the highest performance helicopters in the fleet.

Kaman Aircraft is engaged also in extensive research and development work. Navy projects include short take-off and landing (STOL) aircraft, the rotorchute for the standard M2 air-drop container, and robot helicopters. The "drone" is a modified HTK-1. The first flight without a safety pilot aboard was made on 30 July 1957. The robot was put through a complete series of maneuvers under the remote control of an operator who is not a pilot. Its use in war would avoid risking the lives of crewmen in hazardous operations. Nuclear R and D work is carried out in the Kaman Aircraft Nuclear Division, Albuquerque.

PHANTOM BARGE HITS THE BEACH

OFF SHORE on the California coast, a Marine Corps LVT (landing vehicle tracked) lazily sailed in circles while a Kaman HOK-1 Marine Helicopter cruised several hundred feet overhead. Suddenly, the LVT set a course straight for the sandy beach with the HOK following it. Through the pounding surf and up on the beach went the LVT.

After traveling several hundred feet from where it left the water, the amphibious assault vehicle came to a halt, its engine idling. Several seconds later the LVT's engines stopped.

While the HOK hovered overhead, the amphibian came to life again and, with its engine roaring, it turned and headed back into the surf. For a few minutes more, it cruised through the Pacific water, made a 180-degree turn and returned to the beach where the engine again stopped.

MARINE DIRECTS LVTPS IN SHARP TURN

The helicopter landed nearby, the pilot and his passenger disembarked and walked over to the LVT, from which not one person emerged. The vehicle had been completely unmanned throughout all the water and ground maneuvers.

All of the operations—engine starting and stopping, gear shifting, braking, application of throttle and steering—all had been done remotely by the passenger in the HOK.

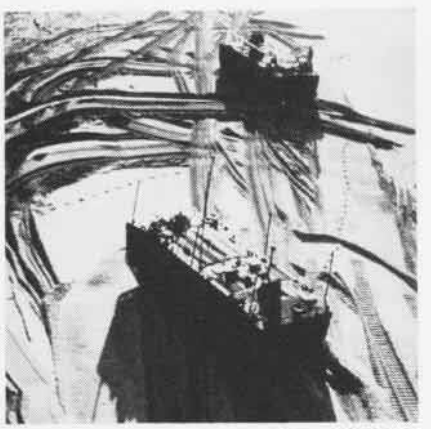
The Marines were evaluating a portable remote control device developed by Lear, Incorporated, of Grand Rapids, Michigan, which will permit Marines to put their newest amphibious vehicles through rugged surf tests without endangering human life. By moving a steering stick similar to an aircraft control stick, and by manipulating buttons and switches mounted on an electronic panel, the LVT can be put through its paces. The "driver" sits high and dry in the HOK with a clear view of the landing ship's position and the surrounding beach and water at all times. Radio signals do the work.

HOK-1 DEMONSTRATES THE POSSIBILITY OF MULTIPLE CRAFT REMOTE CONTROL OPS

UNMANNED AMPHIBIAN HITS THE BEACH

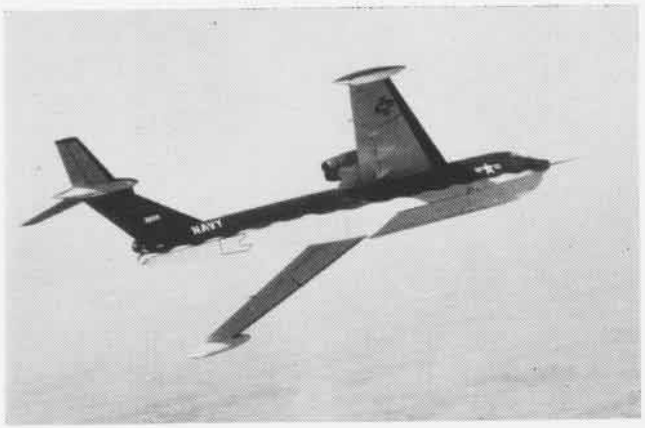
The successful tests have been conducted by the Marines at Camp Pendleton and Monterey, California. LVT's have been directed through surf running up to 15 feet. If a driver were in the vehicle he would have been blinded by waves. Multiple-craft remote control operations were also run. One helicopter directing several LVT's could spot enemy targets on the shore, and concentrate the fire power of all the craft under its control on the target.

Another advantage of the Lear system is that it works equally well on either land or sea. Helicopters already play a key role in the new Marine doctrine of vertical envelopment. The addition of the remote control panel might completely revolutionize combat landing operations in the future. Evaluation and time will tell.



REMOTE CONTROL CAN BE USED ON LAND

ALBEMARLE ADDS TO MOBILITY



JET SEAMASTER WILL BE SUPPORTED BY CONVERTED ALBEMARLE

AV-5 CAN ALSO HANDLE P5M PATROL SQUADRONS WHEN ASSIGNED.

THE NAVY'S only seaplane tender converted to service jet-powered aircraft has been at Philadelphia Naval Shipyard since the middle of April receiving the final modifications necessary to handle the job.

USS *Albemarle* (AV-5) represents Naval Air's answer to logistic support of the jet-powered P6M *Seamaster*. Equipped with a stern recovery ramp and servicing boom, this new water handling gear enables the heavier aircraft to be taken aboard without cranes.

The ramp, housed in the stern section of the ship, is streamed out into the water, submerged, the P6M mated to a cradle affixed to the ramp, and the two retrieved into the deck housing.

The aircraft can also be serviced while in the water next to the ship and is held in a fixed position by means of a specially designed boom. Mounted on a stationary base, the boom moves with the motion of the waves, thus protecting the plane. The tender will provide armament and fuel and will maintain a stock of parts including engines should replacement be necessary.

Also included in the revamped ship are a semi-sheltered area and a service drydock facility, making the AV-5 a highly mobile seadrome capable of supporting jet seaplanes in any area of the world where there is water.

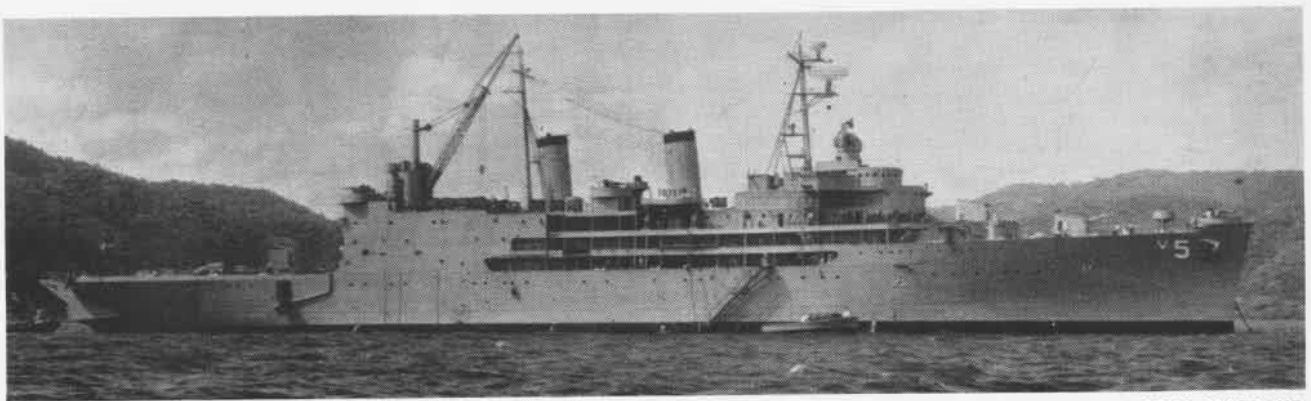
The *Albemarle* is 537 feet long, 87 feet wide, and displaces 14,000 tons. There are 30 officers and 600 men in the ship's company under the command of Capt. William A. Dean. Cdr. Joseph Lynn is executive officer.

Commissioned in December 1940 at Philadelphia Naval Shipyard, the ship was named for Albemarle Sound, North Carolina. During the war, it provided logistic support to patrol squadrons in the American and European theatres of war and contributed substantially to the anti-submarine effort during that conflict.

In August 1950, the *Albemarle* was deactivated and remained in that status until February 1956. It was recommissioned 21 October 1957 after undergoing extensive conversion, and was equipped to handle the P5M *Marlin*. Norfolk was assigned as home port for the seaplane tender.

Shakedown training and ORI were conducted at Guantanamo Bay, Cuba in January. The AV-5 then took part in *Operation Springboard*, during which the four Atlantic seaplane squadrons, flying P5M's, conducted training exercises while attached to the ship.

By early 1959, the *Seamaster* will be operating with the *Albemarle*. The combination will present a powerful picture of the mobility of Naval Air.



STERN RAMP, SERVICING BOOM, DRYDOCK AREA AND SPECIAL WATER HANDLING EQUIPMENT MAKE THE AV-5 A MOBILE SEADROME.

LST to be Missile Ship

Designed to Handle Regulus II

Conversion of the LST-857 to the *Regulus II* testing ship USS *King County* (General Auxiliary craft, AG-157) is scheduled to be completed in late September, according to officials at Mare Island Naval Shipyard. Upon completion of the work, the ship will be turned over to ComSubPac and assigned to Port Hueneme for operations with the Naval Air Missile Test Center, Point Mugu.

The *King County* will contain *Regulus II* missile handling, launching and storing facilities, prototypes of installations planned for the nuclear submarine USS *Halibut*, also under construction at Mare Island.

The King County project will serve two other major purposes: it will provide a checkout for the missile system to be installed in the *Halibut*, and it will serve as a training vehicle for Navy missile crews to be assigned to the *Halibut* and other submarines which will use similar missile systems.

The conversion of the LST to a missile ship is a joint project of the Bureau of Aeronautics and Bureau of Ships.

In addition to serving as a training facility for missile crews, it is expected that the ship will be used to test new missiles, missile guidance systems and other components.

Fighting 31 Gets Awards

43 of Possible 45 E's Presented

Pilots of Fighting 31 have finally received awards for excellence which were earned last November. The "Tomcatters" had been too busy for the awards to catch up with them until they got a short respite in Genoa, Italy, from a heavy Sixth Fleet operational schedule.

Cdr. C. N. Conatser, executive officer of the *Saratoga*, presented 43 "E's" out of a possible 45 awards squadron pilots could have earned for high and low altitude day, and high altitude night intercepts.

Since the competition, VF-31 has moved on and off aircraft carriers three times, conducted intensive night and day carrier qualifications, made predeployment inspections of its *Demons* to insure combat readiness and engaged in three Atlantic Fleet, two NATO and four Sixth Fleet exercises.

SHIP'S COMPANY NAVAL AVIATORS USE THE 'GRAY GHOST' TO MAINTAIN PROFICIENCY

'GRAY GHOST' FOR PRACTICE

PILOTS ATTACHED to the ship's company of the USS *Saratoga* have made good use of the ship's TF-1 aircraft to maintain their carrier-based flight proficiency. In port or out, at anchor or underway, "the Gray Ghost of the Med Coast" is usually in the air.

RAdm. Clifford C. Cooper, ComCarDiv Six, took advantage of the versatile TF when, in Genoa, he flew to a conference in Nice with VAdm. C. R. Brown, Commander Sixth Fleet. Capt. W. E. Ellis, Chief of Staff to Adm. Cooper, and *Saratoga's* Commanding Officer, Capt. A. R. Matter, are also members of the "*Sara's* Cat and Catch at Anchor TF Club."

Although the ship has visited only five ports since arriving in the Mediterranean, the *Sara's* assigned TF has an impressive list of places visited painted on its Fighting Cock-adorned cowling, including a number of air terminals visited during last fall's NATO cruise.

The TF has been used for many duties. In cross service operations with the British Navy, the TF has several times been engaged in the arresting gear of the British carriers, HMS *Ark Royal* and *Eagle*.

In the picture above are from left to right (back row): RAdm. Cooper, Capt. W. E. Ellis; Capt. A. R. Matter, Cdr. C. N. Conatser, *Saratoga* XO; (front row) Cdr. R. W. Windsor, Lt. W. W. Bowers; Lt. S. T. Peddy, Lt. S. A. Kauflin, and Lt. W. A. Gureck.

THE TF HOOKS ARRESTING GEAR DURING A LANDING WHILE CVA-60 IS AT GENOA, ITALY

MARS-37 MAKES MAJOR REPAIRS

MARS-37 ASSEMBLY SHOP MEN READY A COUGAR FOR OVERHAUL. THE F9F-8 WILL LEAVE THE SQUADRON IN PRIME CONDITION.

ENGINEERING CHIEF, MSGT. CHIPPLE, MAKES OUT WORK ORDER

MODIFICATION WORK IS ALSO DONE IN MARS-37 ASSEMBLY SHOP

MARINE AIRCRAFT Repair Squadron 37 has the impressive mission of providing major repairs for all aircraft at MCAS EL TORO, the Marine Air Facility, Santa Ana, and transient Navy and Marine planes in the area in need of assistance. LCol. Boyd C. McElhany, Jr. commands the squadron which is currently servicing 17 different types of aircraft.

Tactical and maintenance squadrons perform routine upkeep and minor repairs on their own aircraft. If the job exceeds their capabilities, the airplane is then turned over to MARS-37.

When the aircraft is delivered, a team of specialists determines the repairs required. The engineering section prepares a work order and the departments concerned are notified.

First stop on the plane's journey through the MARS-37 plant is the Assembly Shop. It is broken down to the extent necessary, and the parts are farmed out to the cognizant shops.

The power plant of the plane, either jet or propeller, is dismantled and checked in the Engine Shop. The Metal Shop crew repairs or replaces any damaged parts or sections of the fuselage. They are often called upon to fabricate unavailable parts.

Wheels, landing gear and brakes are checked under the critical eyes of the trained Hydraulics Shop personnel. This section also services the tires, from small nose and tail wheels through large transport.

In a second floor work-area, Ordnance Shop armorers correct any faults or malfunctions in the aircraft's armament, then return the equipment to the plane, ready for any assignment.

The same exacting routine of check, repair, re-check, is followed by the

Electronics Section. In this day of high-performance aircraft, the electronic "brains" of the aircraft must think and react faster than a jet flies. The intricate systems are examined and corrected by advanced technical equipment, so that every part and piece will accomplish its assigned mission when called upon.

The Oxygen Shop of MARS-37 modifies and repairs oxygen masks and all phases of the oxygen system. They also maintain other survival equipment such as canopy jettison mechanisms, seat ejection gear and automatic lap belts. In addition, major repairs of all oxygen regulators aboard the station are made by the section.

After the Assembly Shop has collected the various components and reconstructed the aircraft, the Paint Shop gives the plane a face-lifting and replaces identification markings.

Finally the plane is completely checked out prior to delivery. When the squadron returns to claim it, the plane will be in perfect condition.

Not all of the squadron's repair work is performed in a well-lighted and fully-equipped hangar. Work crews are frequently dispatched to remote locations if an aircraft is forced down. They are prepared to replace a small, vital part or make a complete engine change, and usually remain at the scene until the disabled plane can be moved.

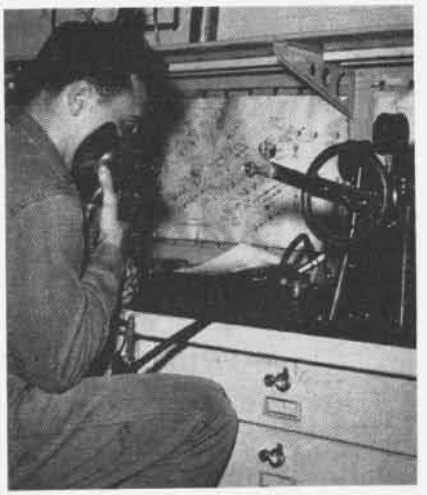
A Technical Publications library provides complete reference material on every type aircraft in use aboard the station, and on the majority of the individual parts within each plane. It consists of hundreds of reference books and manuals, plus hundreds of feet of microfilm containing detailed drawings and instructions on components and their repair. If a part or piece of equipment is not readily obtainable, a drawing is made from microfilm for the Metal Shop.

In addition to performing checks and trouble shooting, the Assembly Shop does modification work. For example, a modification was received on a group of wing tanks issued by Navy Supply. The entire stock was altered locally and returned ready for issue.

The squadron maintains nine different types of aircraft which are used for the flight proficiency of pilots assigned to administrative billets.

However, the main mission of the Marines of MARS-37 is to keep combat aircraft in the air. Some of the planes delivered to the squadron cannot be repaired on the station level, and must be transported to one of the large Overhaul and Repair units at Alameda or San Diego. The squadron first tries to do the job in its own shop.

HYDRAULICS SYSTEM IS PRESSURE-TESTED



OXYGEN MASKS ARE REGULARLY INSPECTED

ELECTRONICS EQUIPMENT IS CHECKED OUT

CPL. R. ELWELL INSTALLS A SAFETY RIM

METAL SHOP MEN STUDY A PARTS PROBLEM

CPL. D. HANSEN DRILLS FUSELAGE PANEL

CAA EXPERTS IN AIRBORNE LAB CHECK RADIO RANGE ACCURACY

JAMES T. PYLE, ADMINISTRATOR, WITH TWO CAA INSPECTORS

CAA MARKS 20 YEARS OF PROGRESS

THE Civil Aeronautics Administration celebrated its 20th year of progress in June. Few organizations in America have grown so rapidly, as the following statistics testify.

In 1927, short airlines carried 8670 passengers in open aircraft. In 1930 there were 384,000; in 1935, 762,000; in 1940, 3,000,000; in 1946, 41.7 million. By 1970, experts estimate 120,000,000 passengers per year. That these passengers have progressively enjoyed better aircraft, safer flight and more reliable scheduling over the years is a tribute to CAA.

About 65,000 privately-owned aircraft are being flown some ten million hours by 200,000 pilots annually. They, like the airlines, lean heavily on the knowledge and resources of CAA.

The CAA as we know it today has six major areas of concern: Traffic Control, Navigation Facilities, Flight Operations and Airworthiness, Airports, International Cooperation, and Planning and Development.

The office of Air Traffic Control (ATC) is responsible for operating CAA's air traffic control facilities and the office of Air Navigation Facilities is responsible for their design, construction, maintenance and inspection.

Essentially, air traffic control provides aircraft in flight with longitudinal, lateral or vertical separation from other aircraft. Air traffic in the United States moves under two sets of rules, Visual Flight Rules (VFR) which are used in good weather and Instrument Flight Rules (IFR) which are required when the weather is bad and visibility is restricted.

To control the traffic along the 106,000 miles of airways and at busy airports, CAA has divided the country into 26 segments. In each segment it has established a control facility known as an Air Route Traffic Control Center. These centers carry the full authority for control of all air traffic operating under IFR conditions. In practice, however, the Centers control enroute traffic between terminal points while they delegate to CAA airport traffic control towers the control over traffic operating in a radius of some 20 miles around an airport.

VISCOUNT PROP GETS A CAA INSPECTION

A third type of facility in the control system is the Air Traffic Communications Station which forms the communications link between controllers and pilots in flight along the airways, providing pre-flight and in-flight briefing and flight advisory service.

The three types of facilities are linked by 130,933 miles of teletype and 135,764 miles of interphone lines to bring about a safe and orderly flow of traffic.

Also important in traffic control are the navigational aids which enable a pilot to follow the airway route assigned to him. The signals from these aids, such as very high frequency Omnidirectional Ranges (VOR), form the structure of the Federal Airways.

ATC assigns a pilot on an IFR flight plan a specific altitude at which to fly between his point of departure and his destination, giving the pilot a reserved slot of airspace which moves along with the flight.

Before an aircraft leaves one center, the information about it is passed on by telephone to the next center so that it can take over control. Nearing the destination, the flight is "laddered" down by the center to an appropriate

altitude, then turned over to an airport traffic control tower for approach and landing.

The pilot is in direct communication with the controllers in the tower, who give him such information as headings to fly, position of other traffic, weather, and final landing instructions. At the same time, aircraft on the ground are being controlled outbound by the tower after having been given a clearance and an altitude and route to their destination by the center.

One of the biggest jobs in the CAA is keeping the aids to air navigation, the communications network, and the air traffic system which collectively make up the Federal Airways, operating 24 hours a day.

There are some 4000 maintenance specialists, of which 2105 are electronic experts, whose responsibility this is. They try, through regular preventive maintenance, to avoid breakdowns in the system.

Flight Operations and Airworthiness personnel of the CAA specialize. One group consists of aeronautical engineers who work with the engineers of the air industry when a new plane is being born. All the experience of the years in producing a structure of proper strength and durability is thus brought to bear on all new products. When the plane is produced as a prototype and flight tested, again with a CAA expert on hand, it is approved by the CAA and the manufacturer may then turn it out in quantity.

The mechanic who works on the plane to keep it in condition, the pilot who flies it, the navigator and

TRAFFIC CONTROLLERS TRACK PLANES IN

engineer aboard it and the dispatcher who sends the plane on its journey, if it is a commercial carrier, all must qualify under CAA rules for their Competency and Earn (C & E) certificates.

CAA's General Aviation Inspectors, working from district offices, take care of aviation matters such as fast-growing and important business flying and air taxi and other non-air carrier operations. Visiting the major airports in their districts on scheduled itineraries, they give examinations to applicants for mechanic, pilot and other billets; approve flight and mechanic schools which meet CAA standards; and authorize changes in small aircraft.

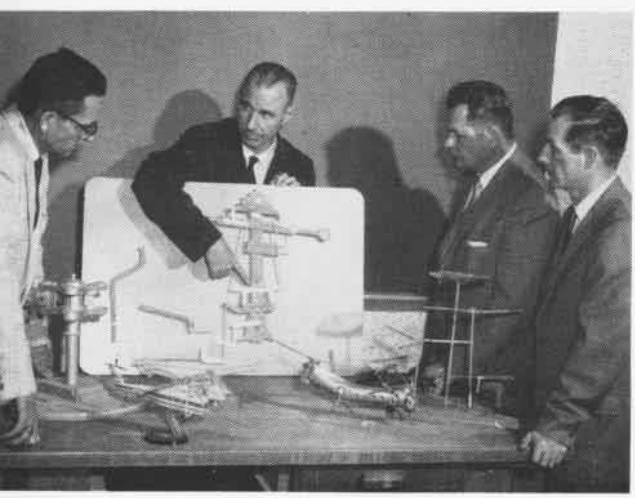
After helping to produce safe aircraft and competent airmen, CAA continues its supervision for safety. It requires periodic inspection to aircraft to insure their airworthiness and it continually forwards to owners the latest information on proper maintenance and special care of aircraft.

Through its Office of Airports, CAA helps build airports. For many years the federal government has shared the expense of airports with local sponsors, and today the Federal Aid to Airports Program is under way with the largest appropriation ever made by Congress for the purpose.

In the international field, the CAA is concerned with many of the same problems it faces domestically. Flight Operations and Airworthiness inspectors and Airways specialists are stationed in the 11 international field offices at London, Paris, Beirut, Bangkok, Manila, Tokyo, Lima, Buenos Aires, Rio de Janeiro, Frankfort and San Juan where they carry on their usual services for U.S. airlines serving their areas, and for the foreign airlines which fly from there to the United States.

The Airways Modernization Board recently established by the President, and the CAA's Planning and Development Office, are constantly projecting aviation requirements into the future to forecast accurately what civil and military air activity will be in the years ahead.

Special teams have been studying what the advent of jet powered aircraft will mean to our airports, airways and air traffic control facilities and other teams have studied the problem of certifying foreign-made jet transports for United States use.



STUDENT INSPECTORS STUDY WORKING PARTS OF A HELICOPTER

CAA TRAINEES LEARN COMPLEX ART OF POSTING ATC FLIGHT DATA

LETTERS

SIRS:

You might be interested to know that the HU-2 Rescue Seat (NANEWS, May 1958, p. 12) has been used to make [several] at-sea rescues as well as more than 200 live test and practice hoists before it was sent to sea.

In feature stories, it is always hard to prevent overselling a new device. It is therefore gratifying to have the rescue seat meet its predicted and test potential in actual rescue.

The seat is intended to supplement, not replace entirely, the kapok sling. The all-purpose rescue device for open sea rescue is very complex and difficult. However, within its spectrum of intended use, the rescue seat is without equal at the moment.

C. J. BURTON
CDR, USN, HU-2

SIRS:

I was interested to read the article concerning the existence of a para-rescue team in the Antarctic (NANEWS, March 1958). It is encouraging to learn that parachute rescue techniques are being practiced by the Navy in an area where they will surely prove their value a hundredfold if needed.

I noted that the article was in error on two points. TSgt. Patton was not the first American to jump in the Antarctic, nor was the group photographed the first Navy men to parachute in the south polar regions. NANEWS has always put out "straight dope," so in an effort to correct a small error, here are the facts:

During Operation Highjump, 1946-47, three parachute jumps were performed by members of Task Unit 68.5.1 in the Little America area, by Army MSgt. Santell A. London, Robert R. Johnson, BMC, and myself. Sgt. London later gave his life while serving in the 10th Rescue Squadron, Ladd Field, Alaska, while engaged in the "Clobbered Turkey" B-29 rescue operation on Christmas Day 1947.

MARVYN D. SPRAKE, PRC, USN

NAS GLYNCO

¶ You are correct, Chief, as this official picture of Sgt. London shows. It was made in February 1947, just after he jumped from an R4D over the Antarctic. All of which further proves that there isn't any such thing as an unchallenged claim of 'first.'

Any old timers still around from the Byrd 1929 expedition, or the Ellsworth expedition, who recall an earlier jump?

No 'Orphans' at El Centro

Red Carpet Is Out for Transients

If you should be forced to lay over at NAAS EL CENTRO while awaiting a break in the weather, you need no longer fear the embarrassment that comes with being stranded in your flight suit, broke, and barred from club life that requires appropriate attire.

The station has established an Orphans' Club for such guests.

Upon checking in with operations, pilots and crewmen without personal gear are issued a sports shirt, slacks, drawers, socks, and a "comfort" kit which includes shaving gear, towel, soap, a toothbrush and toothpaste. Shower facilities and transportation are also made available.

And to get their visit off on the right foot, the hapless travelers get the first one "on the house" at the Officers Club, CPO Club or the EM Club. Hot meals are made available and checks for limited amounts are cashed.

Clothing issued such "orphans" is considered appropriate for any activity on the station. Furthermore, pilots and crewmen wearing this clothing (which includes a royal blue sports shirt) can be easily identified by station personnel, who have been instructed in neighborliness.

Owing to a limited amount of non-appropriated funds at present, the quantity of "Orphan Kits" is below the desired level but Capt. Ben Moore, Jr., commanding officer, says that as funds become available the supply will be increased to meet all needs.

NAVAL AVIATION NEWS

Published monthly by Chief of Naval Operations and Bureau of Aeronautics to disseminate safety, training, maintenance, and technical data. Address communications to Naval Aviation News, Op-05A5, Navy Department, Washington 25, D. C. Office located in room 5E629 Pentagon; Telephone extensions 73685 and 73515.

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Use of funds for printing this publication has been approved by the Director of the Bureau of the Budget, 22 April 1958.

● COVER

Something new in the skies is seen as WF-2 aerodynamic prototype flies over southern Maryland during tests conducted by Naval Air Test Center.

● SUBSCRIPTIONS

Naval Aviation News is now available on subscription for a $2.50 check or money order ($.75 additional for foreign mailing) made payable to Superintendent of Documents, Government Printing Office, Washington 25, D. C. Single copies are 25 cents each.

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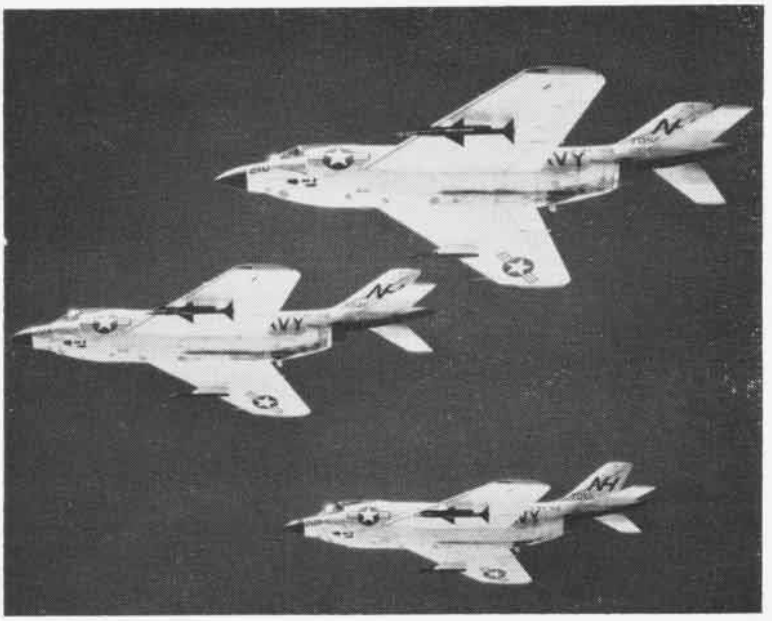
ARMS AND THE MEN

VF-112



Armed Keepers of the Peace, emblazoned in Latin across the patch, is the official motto of Fighter Squadron 112, based at NAS Miramar. Three squadron F3H Demons carrying the deadly Sparrow dramatically give meaning to the phrase.

VF-13

Potentia et Potestias, the Will and the Might, sums up the confident determination of Fighter Squadron 13. The men and the weapons must be ready to deliver the punch. VF-13 Cougars from NAS Cecil Field are on a routine training mission.

NAVAL LEADERSHIP

The Naval profession is an honorable one, which has traditionally commanded the respect and affection of our country. Together with our sister services we serve and protect free men everywhere. To maintain the support and respect of society, as well as to meet the requirements of his own conscience, every Naval leader must be in himself an example of our military ideals.

The United States Navy has long been distinguished for the high quality of its officers and men. We must never let this quality diminish. Our challenge in this time of troubles and opportunity is to develop and improve our Naval leadership. The more powerful the weapons that science gives us, the more important the character and will of the men behind them. As these develop, so does the strength of the Navy, the Nation, and the Free World.

The U. S. Fighting Man's Code has well expressed the essence of our problems:

> "War has been defined as 'a contest of wills. A trained hand holds the weapon. But the will, the character, the spirit of the individual—these control the hand. More than ever, in the war for the minds of men, moral character, will, spirit are important."

By Naval leadership is meant the art of accomplishing the Navy's mission through people. It is the sum of those qualities of intellect, of human understanding and of moral character that enables a man to inspire and to manage a group of people successfully. Effective leadership, therefore, is based on personal example, good management practices, and moral responsibility. . . .

. . . Combat readiness requires that all persons in authority observe in themselves the standards of moral behavior and devotion to duty laid down in Navy Regulations. The Navy must also develop and use new concepts of management and executive development to insure efficiency and the best use of people. The key to successful Naval leadership is personal attention and supervision based on moral responsibility.

From **GENERAL ORDER NO. 21**